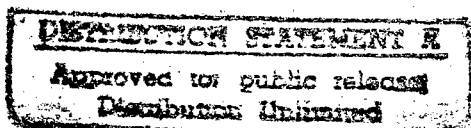

TWIN CITIES ARMY AMMUNITION PLANT

**SUPPLEMENTAL PHOTOGRAPHIC DOCUMENTATION
OF ARCHETYPAL BUILDINGS,
STRUCTURES, AND EQUIPMENT
FOR U.S. ARMY MATERIEL COMMAND
NATIONAL HISTORIC CONTEXT
FOR WORLD WAR II ORDNANCE FACILITIES**

by
**K. Diane Kimbrell
Matthew Snellgrove
Robert C. Vogel
Deborah L. Crown**



**U.S. ARMY MATERIEL COMMAND HISTORIC CONTEXT SERIES
REPORT OF INVESTIGATIONS
NUMBER 8B**



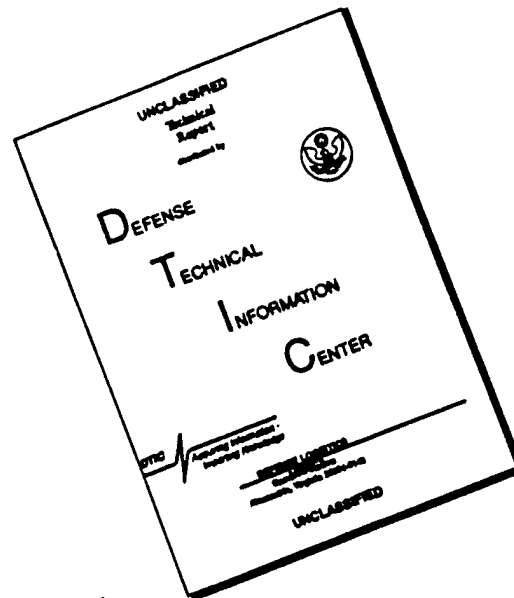
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Fort Worth District**

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Prepared for

U.S. ARMY CORPS OF ENGINEERS
FORT WORTH DISTRICT

U.S. ARMY MATERIEL COMMAND HISTORIC CONTEXT SERIES
REPORT OF INVESTIGATIONS
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by

Geo-Marine, Inc.
550 East 15th Street
Plano, Texas 75074

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WATSON

I.

INTRODUCTION

This report presents a photographic recordation of the archetypal buildings, structures, and equipment of the World War II Ordnance Department's government-owned, contractor-operated (GOCO) industrial facility, the Twin Cities Army Ammunition Plant, New Brighton, Minnesota. Geo-Marine, Inc. was contracted by the U.S. Army Corps of Engineers, Fort Worth District to undertake this project in September of 1993. Duane E. Peter, Director of the Cultural Resources Division of Geo-Marine, Inc., acted as Principal Investigator for the project. Matthew Snellgrove of the Fort Worth Corps of Engineers completed the photographic field work for the project. Robert C. Vogel and Deborah L. Crown of Bear Creek Archeology, Inc. in Cresco, Iowa, supplied the information for the Historical Overview.

This photographic documentation was completed under Delivery Order No. 14, Contract No. DACA63-93 D-0014, Task C, in partial fulfillment of an Army Materiel Command (AMC) Legacy Resource Program demonstration project for assistance to small installations. This documentation also represents partial fulfillment of the requirements of the 1993 Programmatic Agreement among the AMC, the Advisory Council on Historic Preservation, and multiple State Historic Preservation Officers concerning the program to discontinue maintenance of, or dispose of, particular government-owned properties. This work was conducted in compliance with the National Environmental Policy Act of 1969 (PL 90-190); the National Historic Preservation Act of 1966 (PL 96-515), as amended; the Archaeological and Historic Preservation Act of 1974 (PL 93-291, as amended); and Executive Order No. 11593, "Protection and Enhancement of the Cultural Environment."

In completion of this task, a map showing building numbers; a photographic log; the photographs with captions of various buildings, structures, and equipment; and a brief history of the installation have been included for the Twin Cities Army Ammunition Plant.

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II.

PHOTOGRAPHIC RECORDATION LOGISTICS AND METHODOLOGY

The objective of Task C was to photographically record World War II-vintage buildings and equipment. Numerous buildings that housed different stages of the ammunition manufacturing process were of the same architectural design. Accordingly, the order of photographs that follows is based on differences in architectural design, rather than on the step-by-step process of ammunition manufacturing. Modern buildings and necessary equipment in ammunition processing are absent from this photographic account due to their vintage (i.e., replacement equipment, though similar in function and/or design, was not photographed). Ammunition manufacturing is divided into lines according to the type of ammunition being manufactured, and by process stages. Additionally, there may be more than one line for the same ammunition type at the same stage. Accordingly, the architectural design of these buildings in different lines is similar, as is their equipment. Photographs of specific building types were not taken from a single line, rather the photographs were taken from any number of the lines as directed by the sun angle and physical restrictions. In short, though efforts were made to arrange the photographs in order of ammunition and facility processes, the presentation should not be perceived as a complete and chronological order of ammunition manufacturing.

Photographs of ammunition buildings and equipment in this account are classified under either "standby" or "lay-away" status. Depicted active buildings are of an insensitive and/or "safe" nature. Such buildings include administration and shop buildings.

Representative types of all exteriors have been included. However, in many cases, the interior photographs posed some difficulty due to dim interior lighting. In addition, large interiors were impossible to completely photograph due to the limitations of the photographic equipment.

III

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HISTORICAL OVERVIEW

The Twin Cities Army Ammunition Plant, originally the Twin Cities Ordnance Plant, is a complex of industrial buildings, structures, sites, and landscapes located in Ramsey County, Minnesota, near the northern edge of the Twin Cities metropolitan area (Figure 1). The property's historic boundaries encompass approximately 2,400 acres, although in 1994, the federal reservation totals about 2,300 acres. The installation is owned by the federal government and is presently part of the U.S. Army Armament, Munitions, and Chemical Command.

Contextually, Twin Cities Army Ammunition Plant is a product of the government-owned, contractor-operated (GOCO) war materials production program established by the War Department during World War II. The Twin Cities (Minneapolis-St. Paul) area emerged as a potential GOCO candidate primarily on the basis of labor supply (Fairchild and Grossman 1959:107). Twin Cities was one of six GOCO plants built to produce small arms ammunition during World War II, and was operated by Federal Cartridge Corporation under contract to the War Department. The contract to design the installation was awarded to the firm of Smith, Hinchman & Grylls of Detroit, Michigan (MacDonald and Mack Partnership 1984:39). The St. Paul architecture and engineering firm of Toltz, King & Day was responsible for plant layout and design. Foley Brothers, Inc., of St. Paul, and Walbridge, Aldinger Company of Detroit, were the plant's original builders. Commonwealth Electric of St. Paul was the electrical subcontractor, and Reuben L. Anderson, Inc., of St. Paul, was the plumbing and mechanical subcontractor. A work force of more than 5,000 construction workers, the majority of them from St. Paul, Minneapolis, and surrounding communities, was hired to build the plant (Ordnance Department 1942a, 1942b).

Construction of the plant began in August 1941 and was completed in three parts, commonly referred to as Plant 1 and Plant 2, with a major expansion to Plant 2 added in 1942. Plants 1 and 2 each consisted of three large manufacturing buildings with accessory buildings and structures, while Plant 2 expansion consisted of a large manufacturing building and outbuildings. Each main manufacturing building had five lines of production and the plant had a total of 35 lines (Corps of Engineers 1943:2).

The mission of Twin Cities was to produce .30, .50, and .45 caliber ammunition. Production of small arms ammunition began on March 9, 1942, and the plant remained in production for 42 months. The original plant contained two .30 caliber ammunition shops, a .50 caliber ammunition shop, a lead shop, a primer manufacturing building, and a powder house. The plant expansion housed two additional .30 caliber shops, a .45 caliber shop, a .50 caliber shop, a lead shop, a primer manufacturing building, and

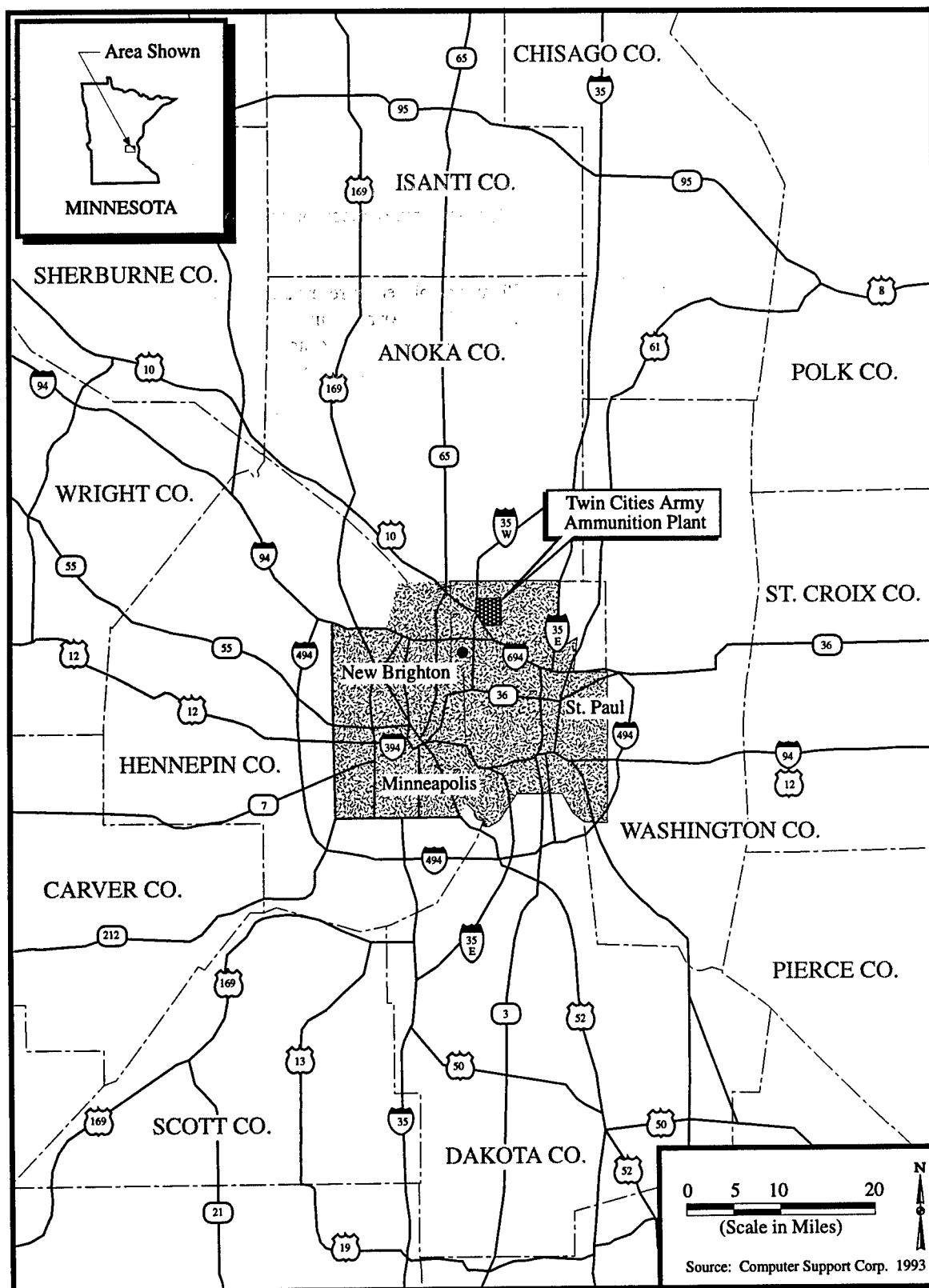


Figure 1. Regional Location of the Twin Cities Army Ammunition Plant.

a power house. Between 1942 and 1945, Twin Cities produced all five main small arms types: ball, armor piercing, tracer, incendiary, and blanks (War Department 1948:83-127). In 1944, two small arms ammunition shops, including the .45 caliber ammunition production lines, were closed down and converted into shops for tooling components for 105 mm and 155 mm artillery projectiles. Also in 1944, the plant opened an important small arms ammunition reclamation center. The design of the .30 and .50 caliber cartridge-disassembly machines by Twin Cities personnel in the late 1940s represented a significant technological advance in small arms salvage technology (Murphey et al. 1993:9-10). Development in ammunition salvage begun during World War II continued at the facility during the Cold War period. The work force reached its peak in July 1943, when employment totaled about 26,000 people, more than half of whom were women.

After V-J Day, Twin Cities Ordnance Plant was placed in reserve status and "mothballed". Renamed the Twin Cities Arsenal, it was operated by the U.S. Army from 1946 to 1950, when the installation was brought back into production to manufacture small arms and artillery ammunition for the Korean War. The Arsenal remained in service until 1957 when it was again closed down. In 1965, during the Vietnam War, the plant was re-tooled for the manufacture of new types of small arms ammunition. It has been on standby status since 1976. Federal Cartridge Company, formerly known as Federal Cartridge Corporation, has been the prime operating contractor since 1941. During its 22 years of production, Federal Cartridge produced 16,513,000,000 rounds of small arms ammunition accepted by the U.S. government.

IV.
PHOTOGRAPHIC DOCUMENTATION

ADMINISTRATIVE FACILITIES

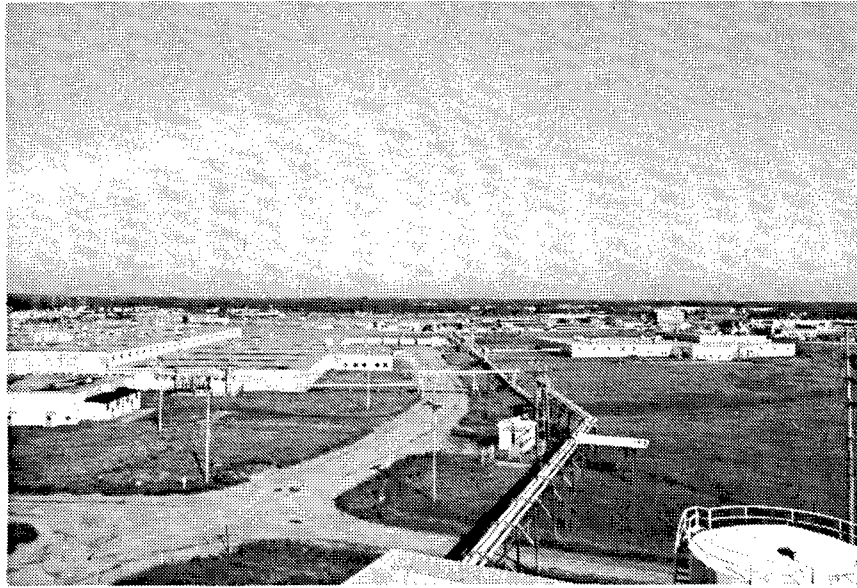


Figure 1. Overview of Buildings 105, 101, and 115 (General Purpose Administration Building, a Small Caliber Loading Plant, and the Power House, respectively).

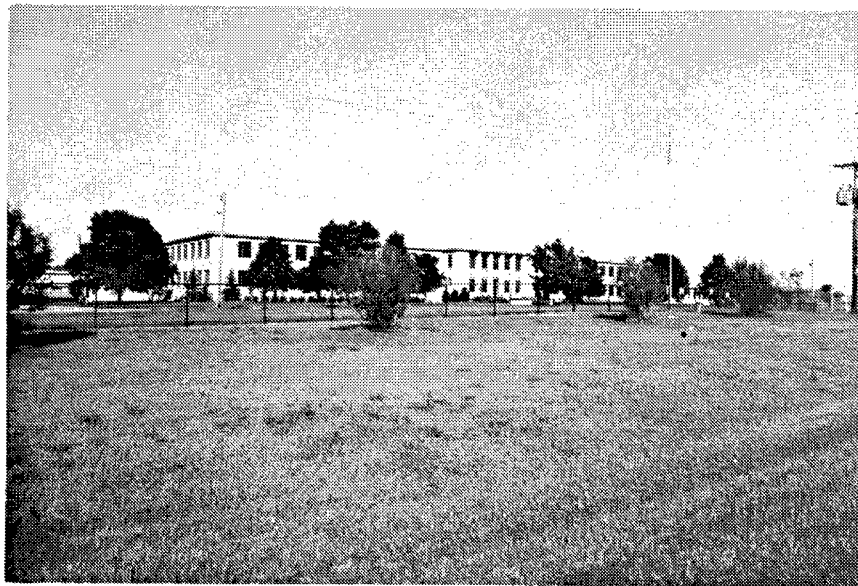


Figure 2. Building 105: Administration Building.

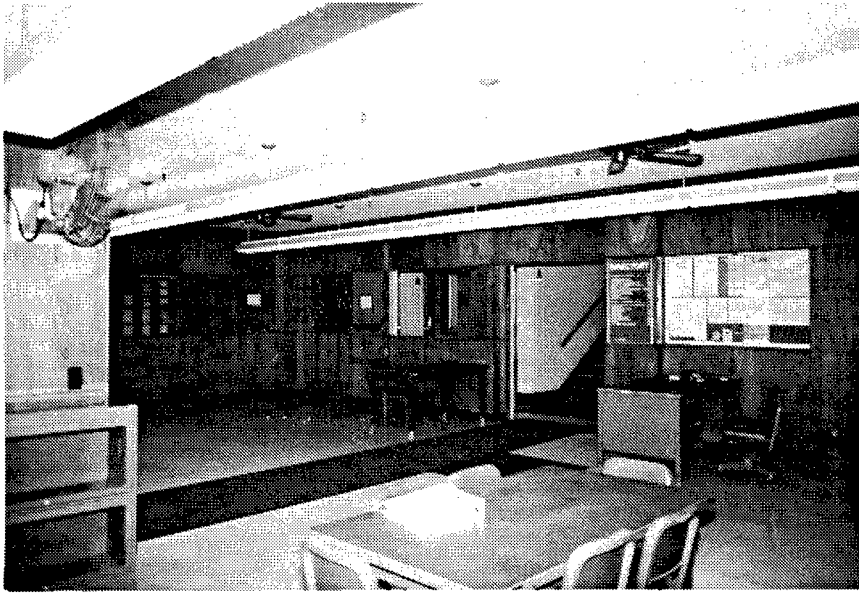


Figure 3. Building 105: Interior view of the lobby of the Administration Building.



Figure 4. Building 199: Tracer Manufacturing Offices.



Figure 5. Building 199: Interior view of the offices for the Tracer Manufacturing Area.

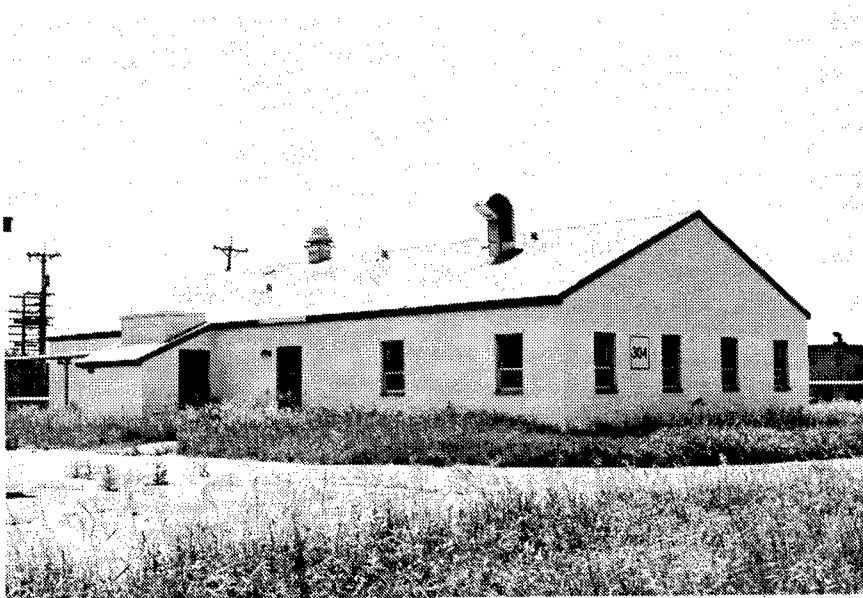


Figure 6. Building 304: Change House with offices.

HOUSING FOR EMPLOYEES



Figure 7. Overview of the Staff Housing Area.



Figure 8. Building 5186: Staff House.

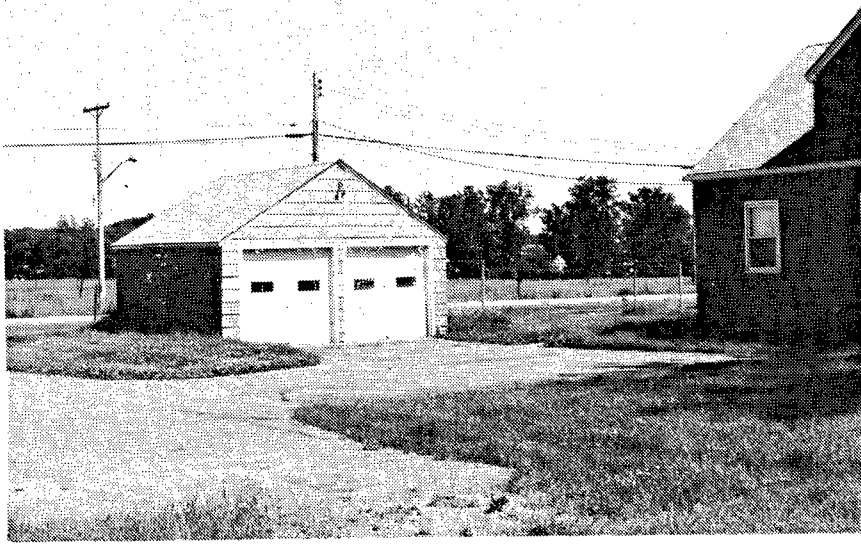


Figure 9. Building 5186: Garage for this Staff House.



Figure 10. Overview of Staff House 5200 and its Garage.



Figure 11. Building 5200: Staff House.

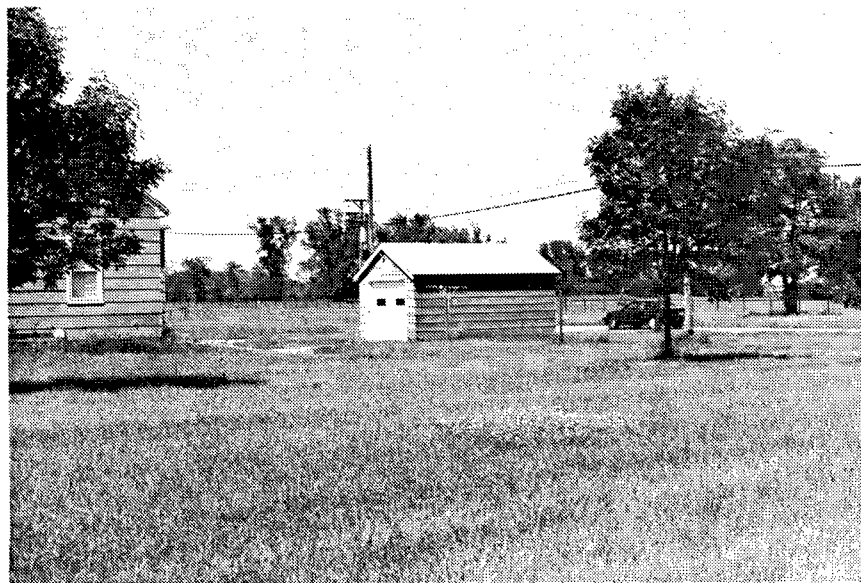


Figure 12. Building 5200: Garage for this Staff House.

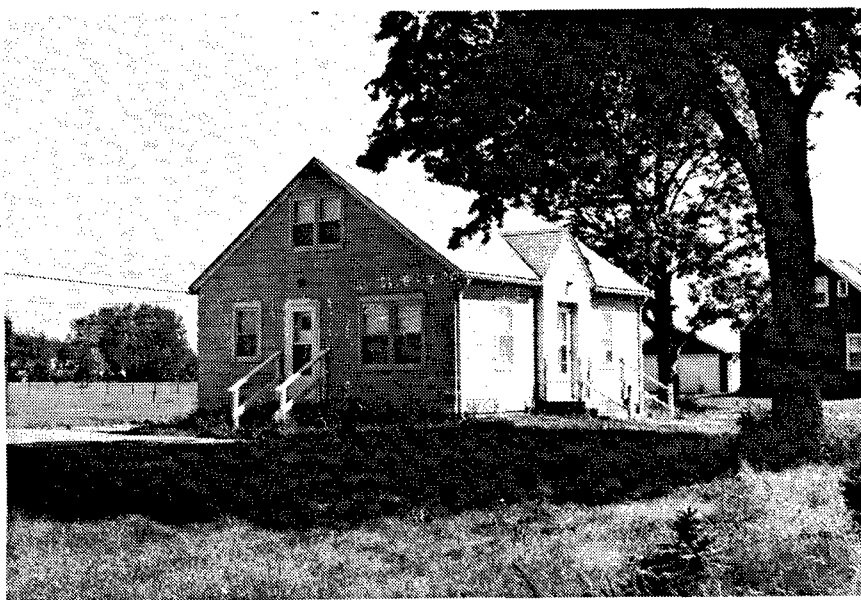


Figure 13. Building 5232: Staff House.

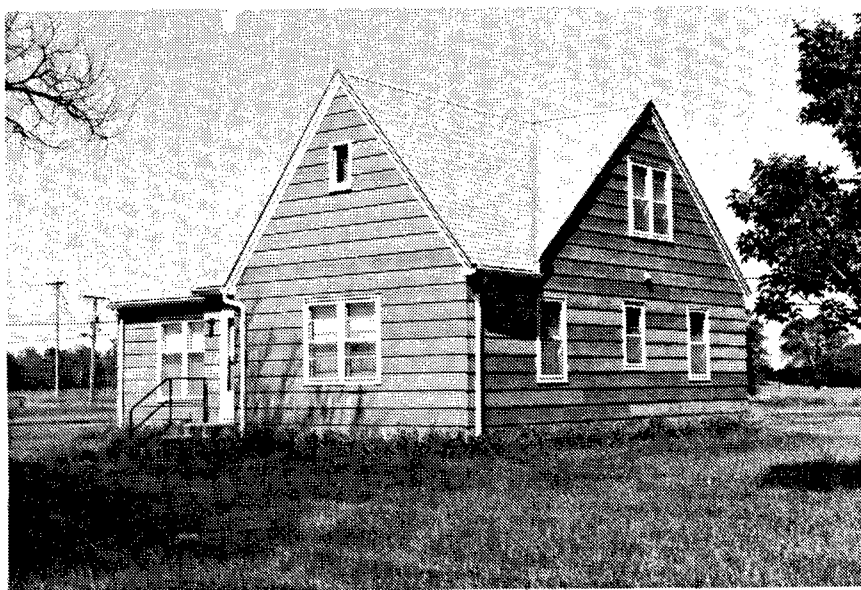


Figure 14. Building 5240: Staff House.

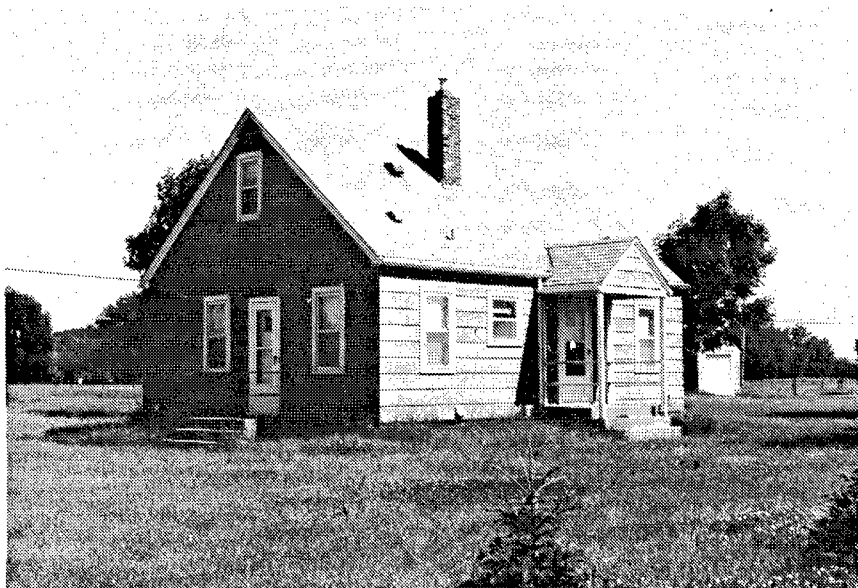


Figure 15. Building 5256: Staff House.



Figure 16. Overview of Staff House 5268 with its Garage.



Figure 17. Building 5268: Staff House.

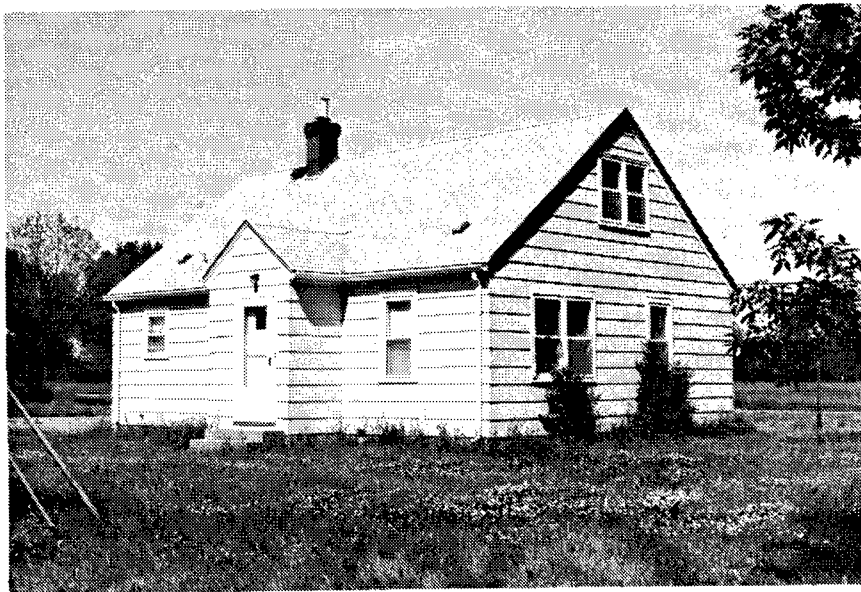


Figure 18. Building 5282: Staff House.



Figure 19. Building 5292: Staff House.



Figure 20. Building 5302: Staff House.

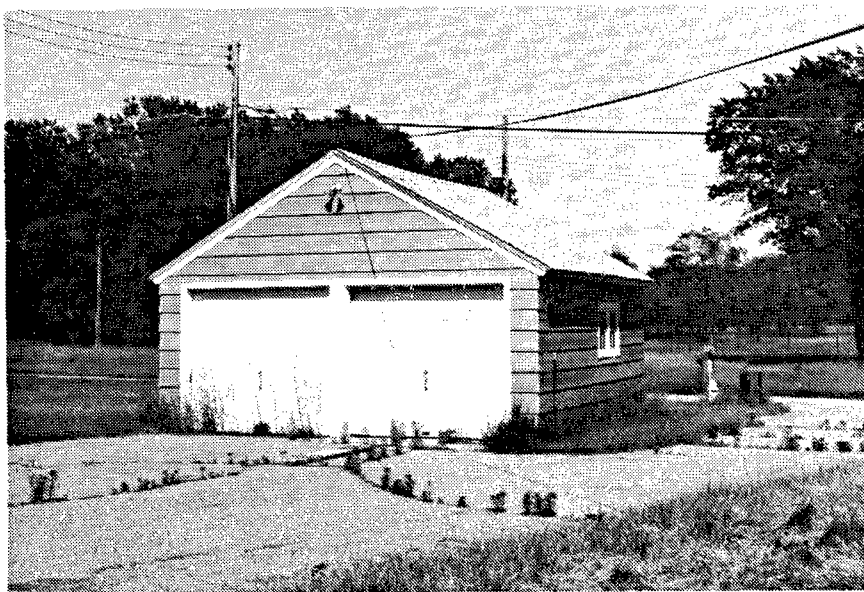


Figure 21. Building 5302: Garage for this Staff House.

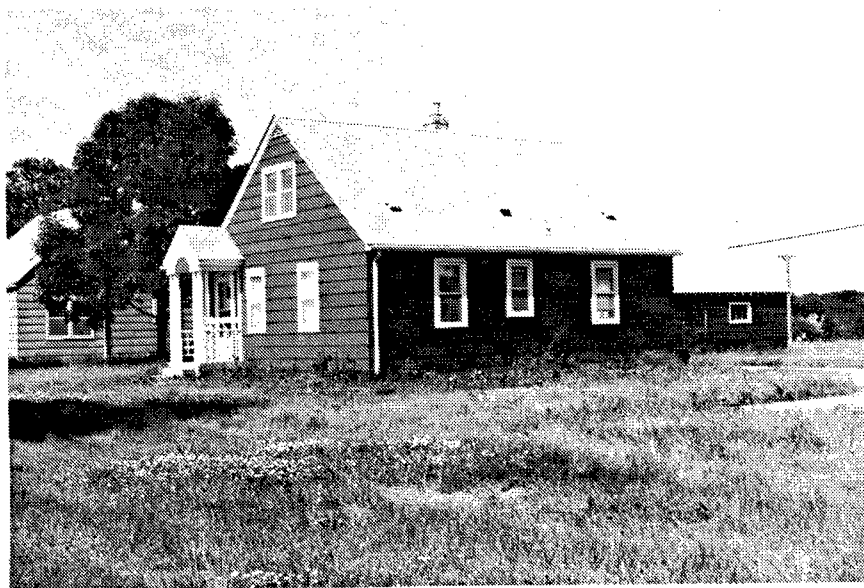


Figure 22. Building 5324: Staff House.



Figure 23. Building 5320: Staff House.



Figure 24. Building 5330: Staff House.



Figure 25. Building 5342: Staff House.

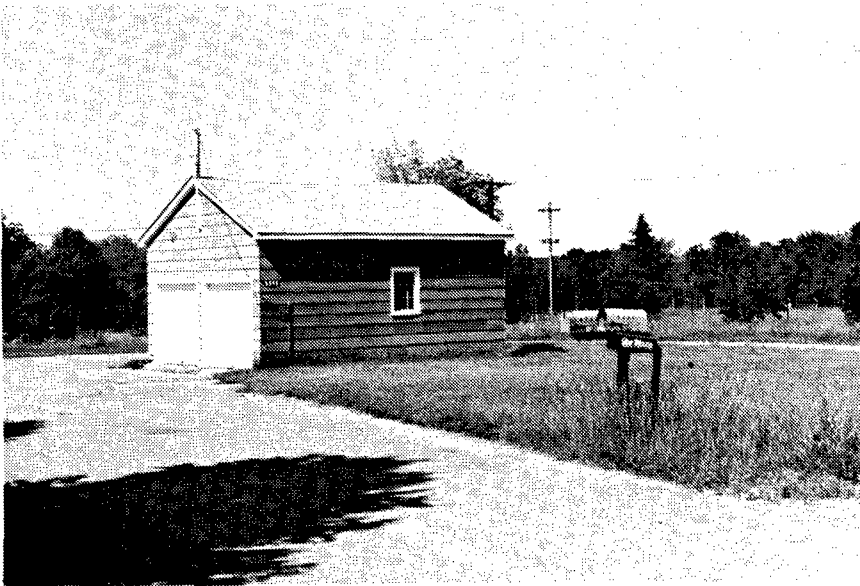


Figure 26. Building 5342: Garage for this Staff House.

MANUFACTURING AND CHEMICAL PROCESS BUILDINGS



Figure 27. Building 135: Primer Manufacturing Building.

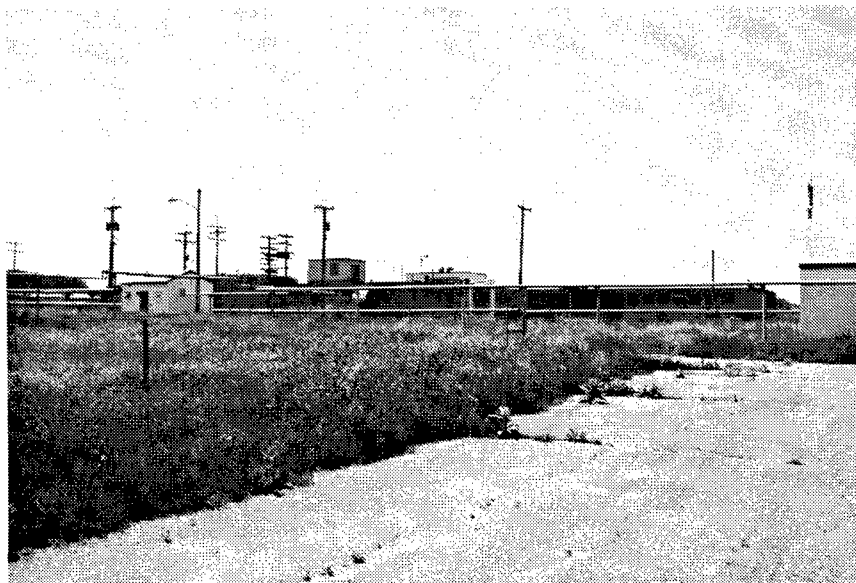


Figure 28. Building 135: East face of the Primer Manufacturing Building.

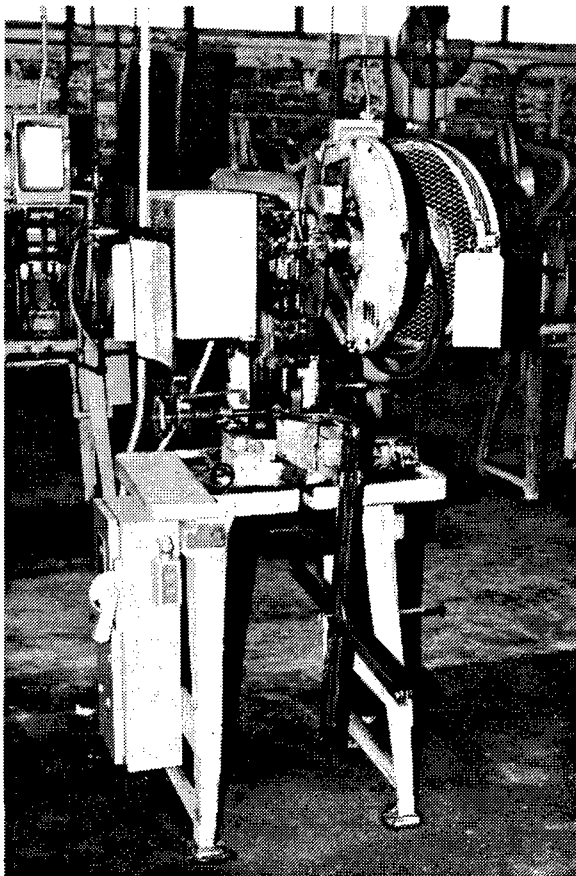


Figure 29. Building 135: A 7.62 mm Primer manufactured by Emhart Manufacturing V&O Division and received at the plant in 1956.

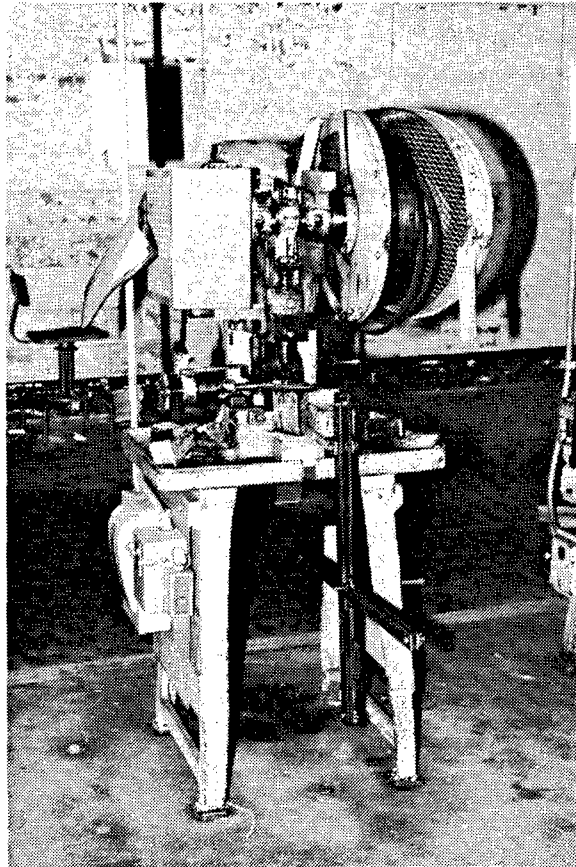


Figure 30. Building 135: A .45 caliber Primer manufactured by the V&O Press Company and received by the plant in 1952.

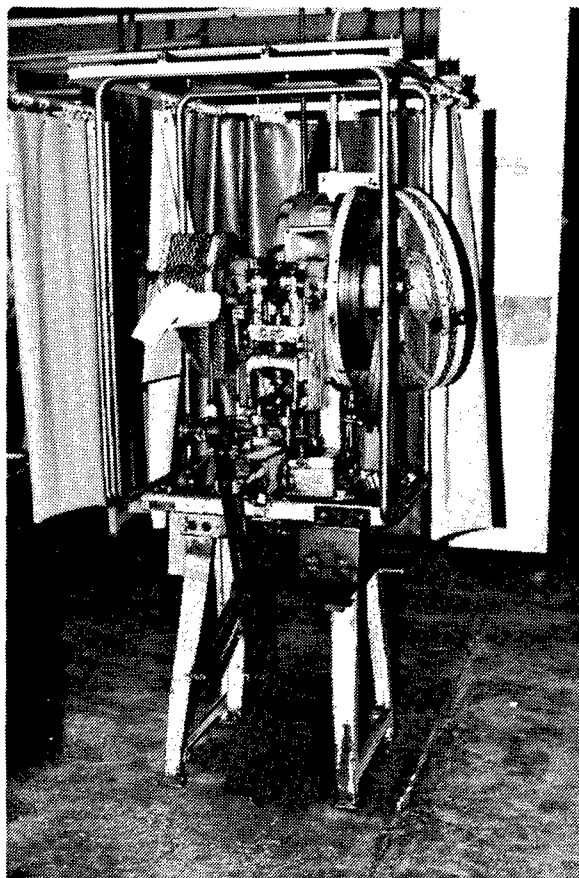


Figure 31. Building 135: A 7.62 mm Primer manufactured by the V&O Press Company and received by the plant in 1942.

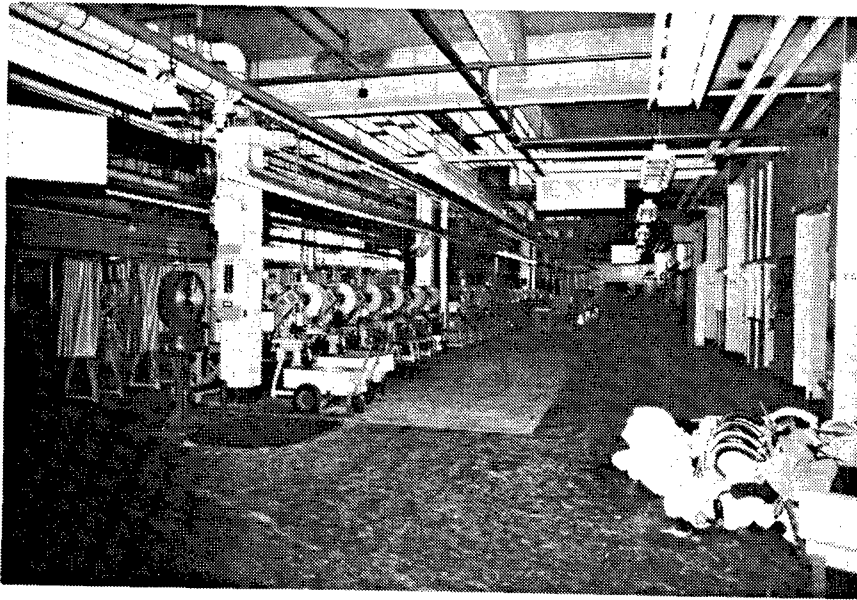


Figure 32. Building 135: Interior view of the Primer Manufacturing Plant showing the in-place Primer Machines.

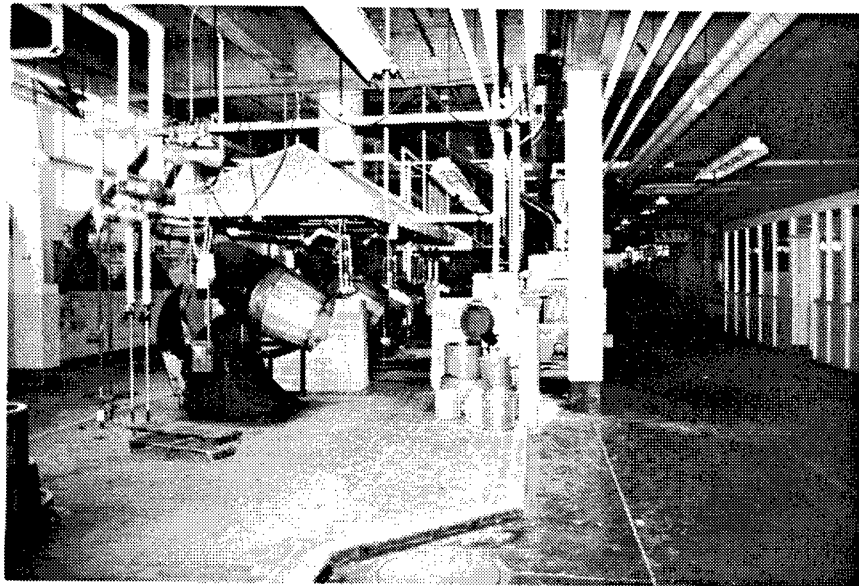


Figure 33. Building 135: Interior view of the Primer Manufacturing Plant showing the in-place Tumblers for .30, .40, and .50 caliber ammunition.

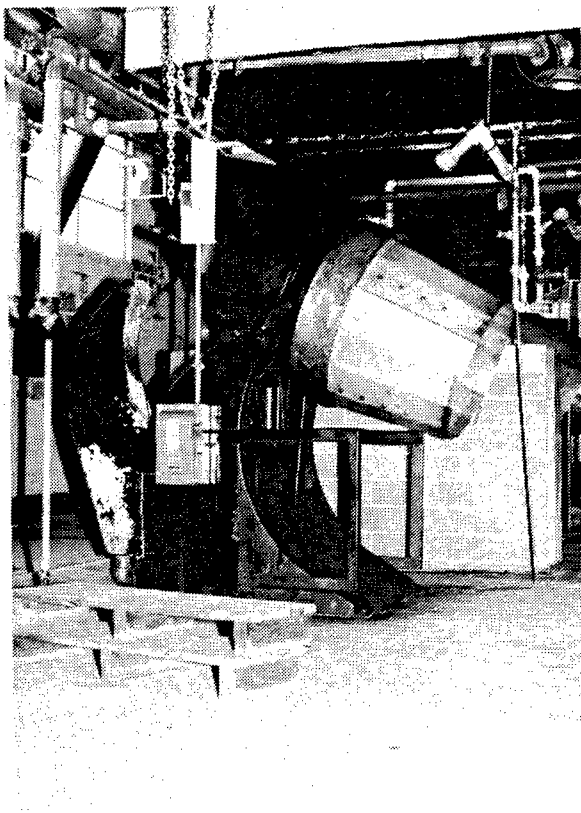


Figure 34. Building 135: Tumbling Barrel manufactured by the Baird Machine Company and received by the plant in 1954.

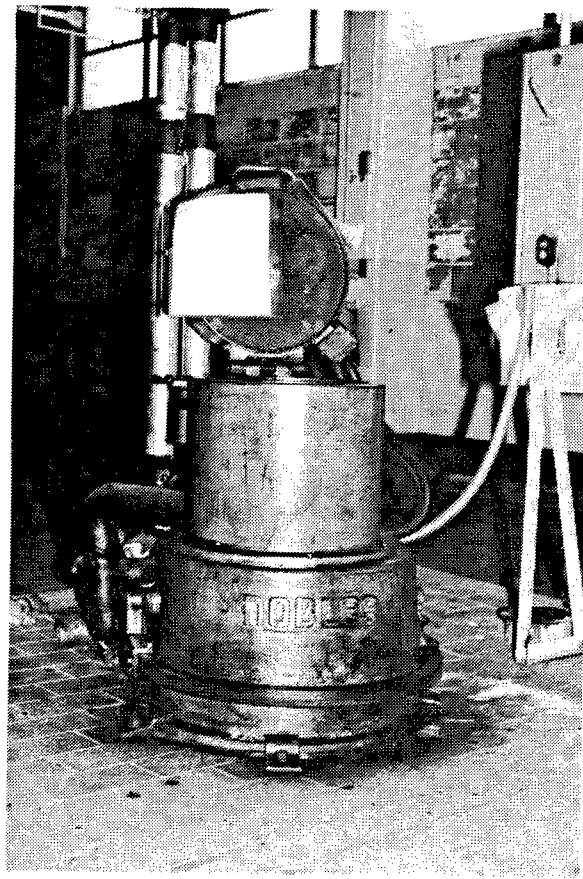


Figure 35. Building 135: Dryer manufactured by the Nobles Engineering and Manufacturing Company.



Figure 36. Building 135: Dryer manufactured by the Nobles Engineering and Manufacturing Company.

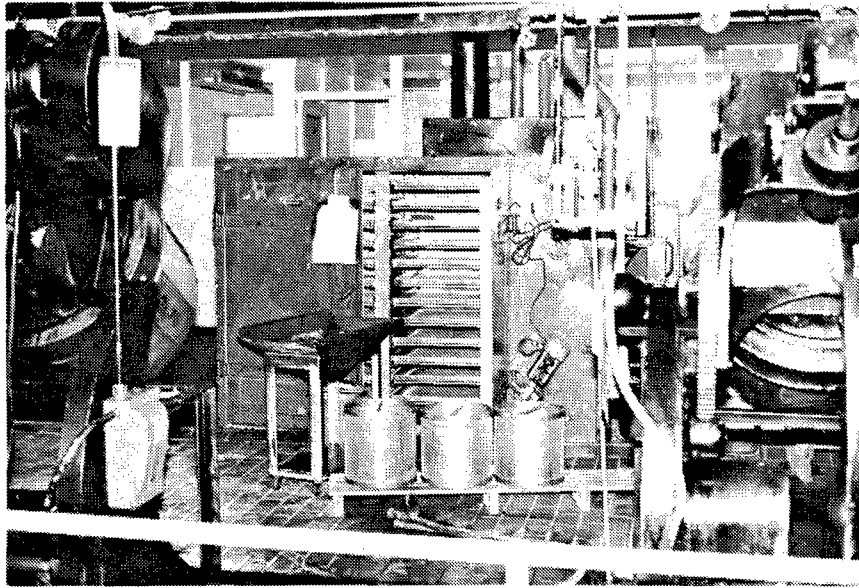


Figure 37. Building 135: Drying equipment for .30, .40, .50 caliber Primers. This equipment was manufactured by the Carrier Air Conditioning Corporation and received by the plant in 1941.

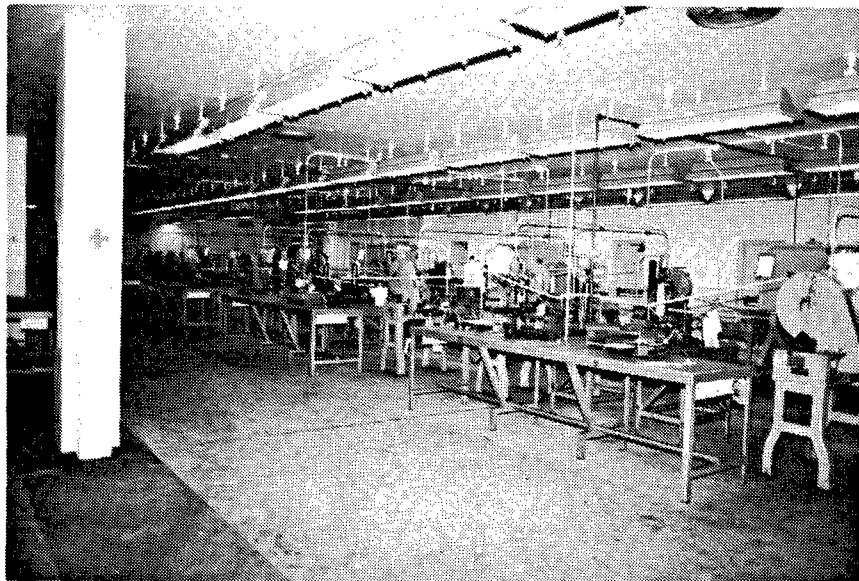


Figure 38. Building 135: Primer Charge and Assembly Area at the Primer Manufacturing Plant.

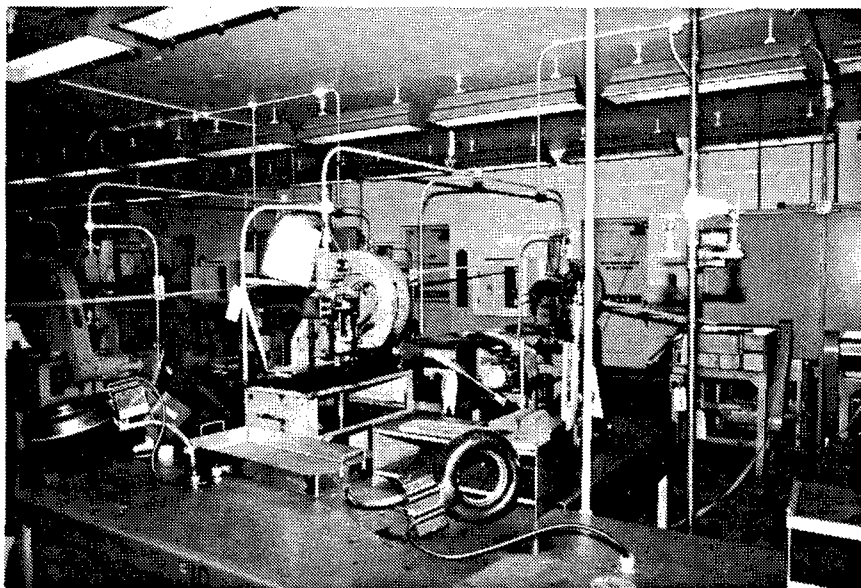


Figure 39. Building 135: Primer Charge and Assembly Work Station at the Primer Manufacturing Plant.

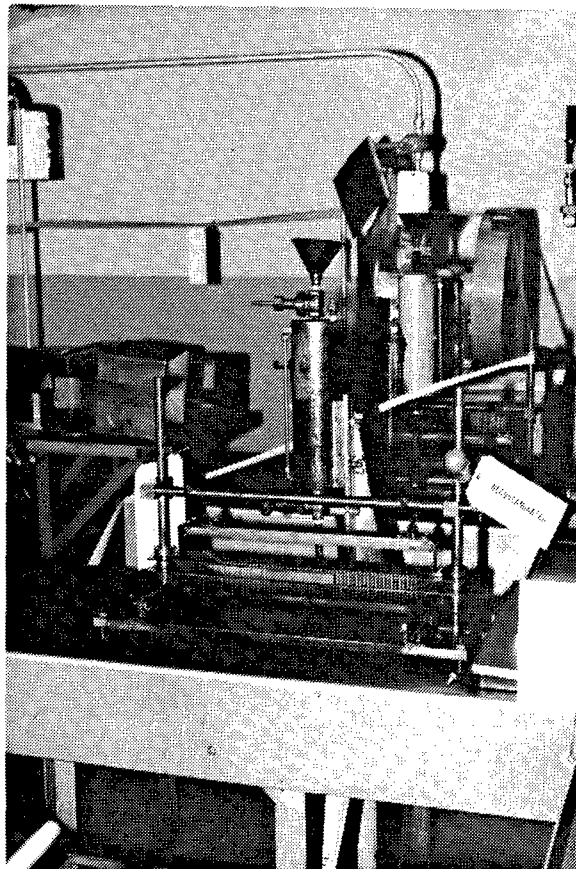


Figure 40. Building 135: A .30 caliber Primer Assembly Lacquer Unit manufactured by the Federal Cartridge Corporation and received by the plant in 1952.

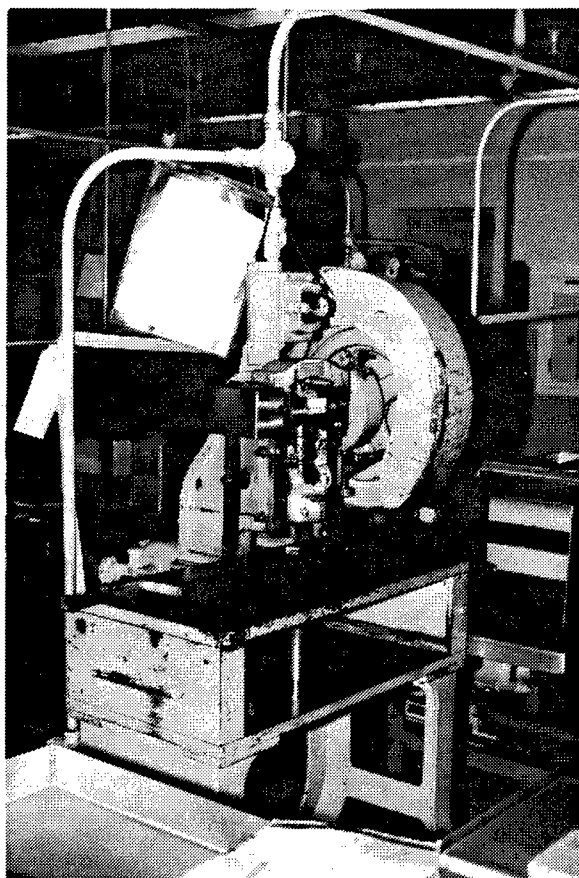


Figure 41. Building 135: Vertical Press for .30 caliber ammunition, manufactured by the Hires, Castner and Harris Company and received by the plant in 1953.



Figure 42. Building 135: Cup - Anvil Shaker for .30 caliber ammunition manufactured by the Emhart Manufacturing V&O Division and received by the plant in 1954.

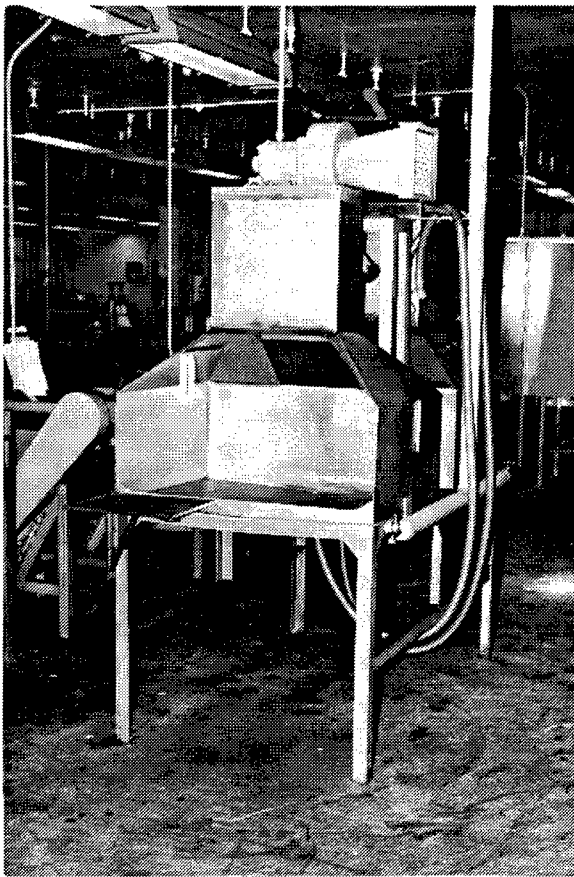


Figure 43. Building 135: Primer Table Charging Hood manufactured by Dayton's Bluff Metal Works and received by the plant in 1956.

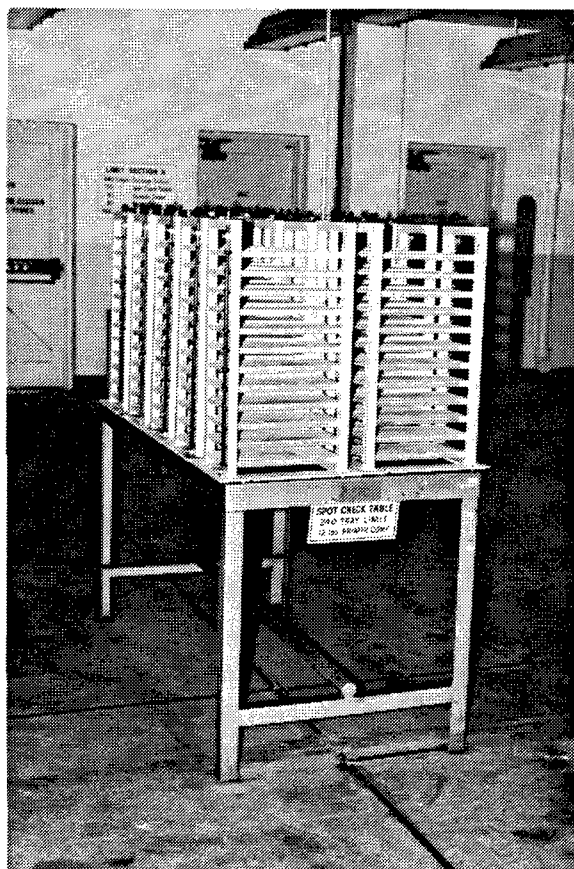


Figure 44. Building 135: Spot Check Table.

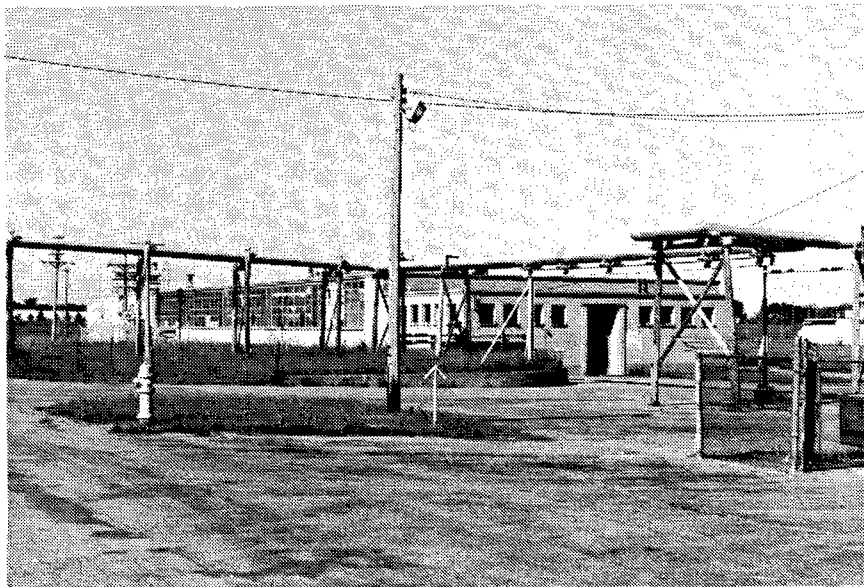


Figure 45. Building 111: Lead Extrusion and Swaging Building.

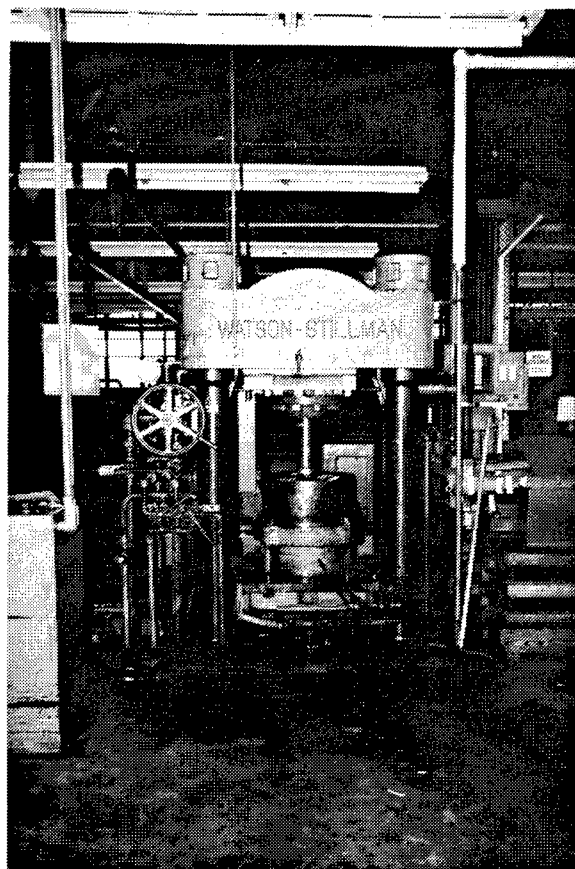


Figure 46. Building 111: Lead Extrusion Press manufactured by Watson Stillman Company.

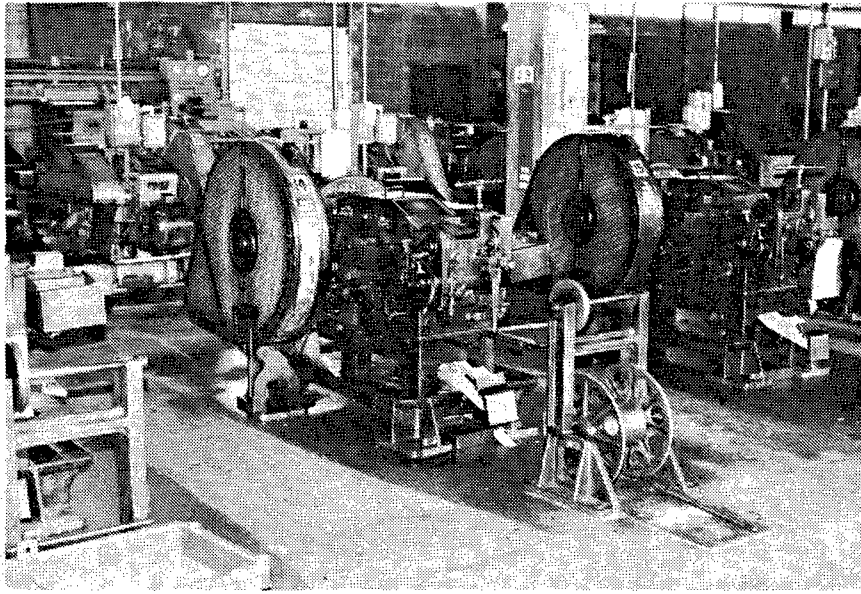


Figure 47. Building 111: Heading Machine for .30, .40, .50 caliber ammunition manufactured by the National Machinery Company.

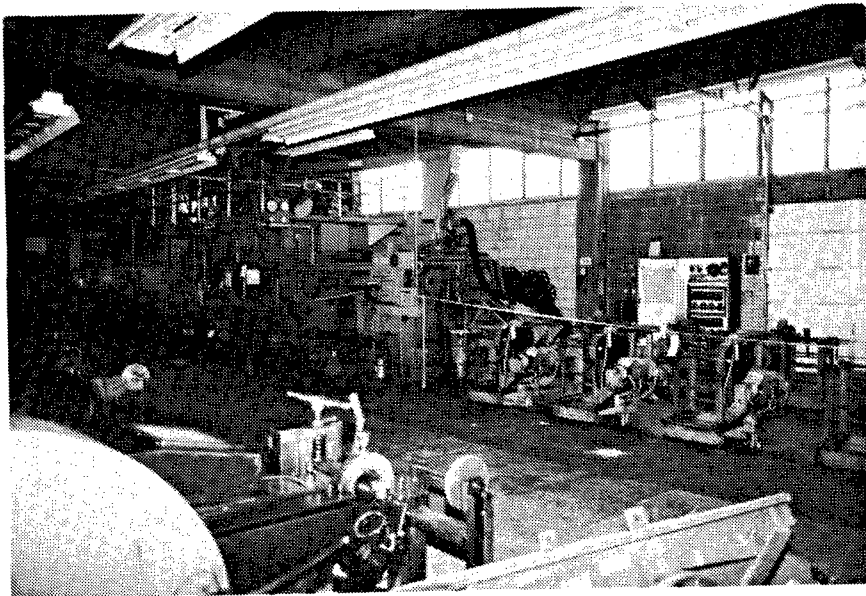


Figure 48. Building 111: Hydraulic Press for Lead Extrusion manufactured in 1969 by the Farrel Corporation.

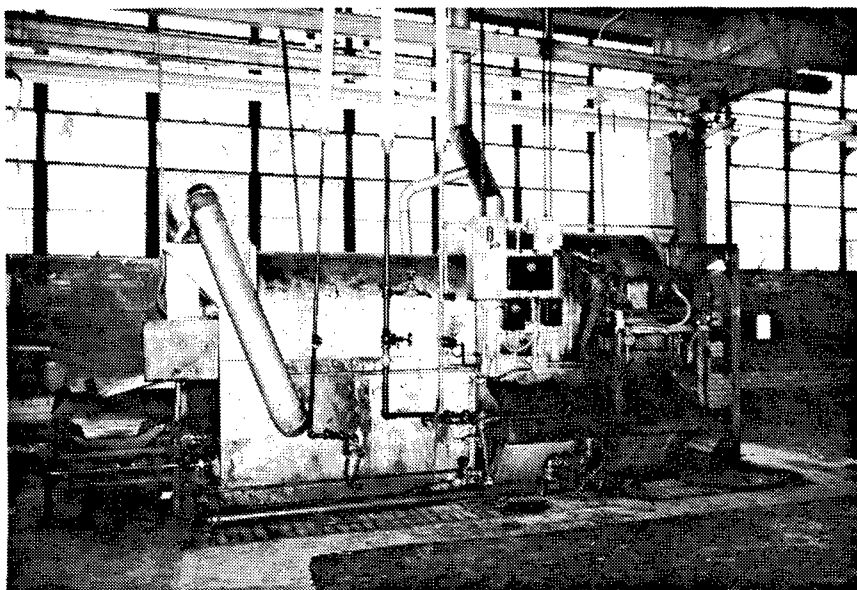


Figure 49. Building 111: Wash, Rinse, and Dry Machine manufactured by the N. Ranschoff, Incorporated and received by the plant in 1941.

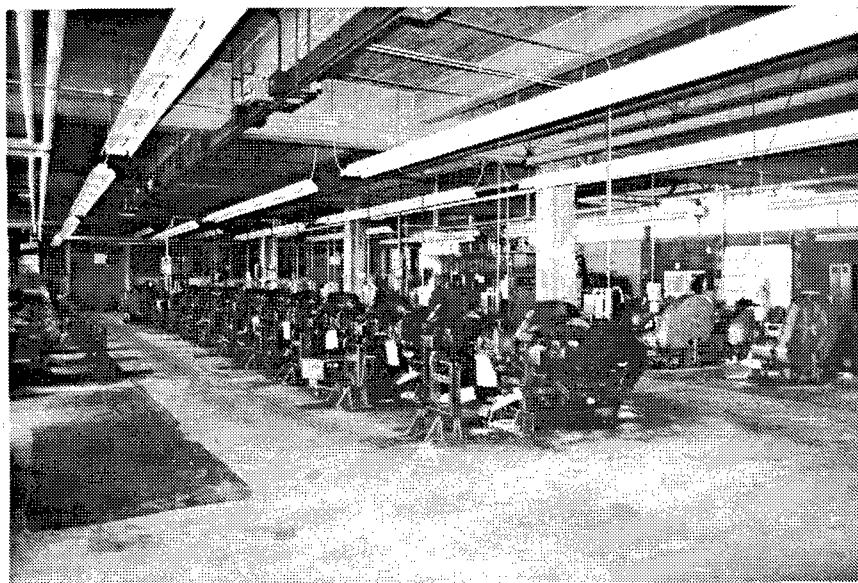


Figure 50. Building 111: Interior view of the Lead Extrusion and Swaging Building.



Figure 51. Building 327: Tetracene Precipitation Building.

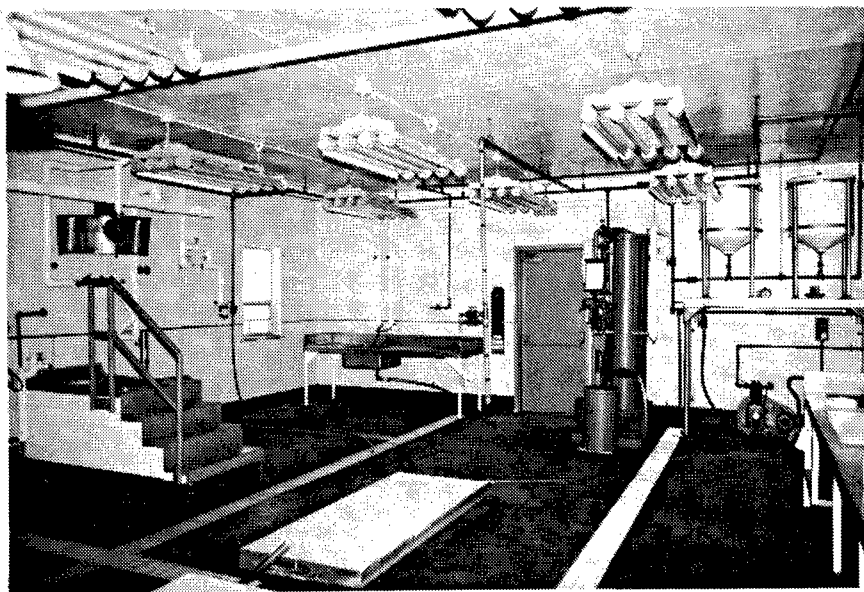


Figure 52. Building 327: Interior view of this Tetracene Precipitation Building.

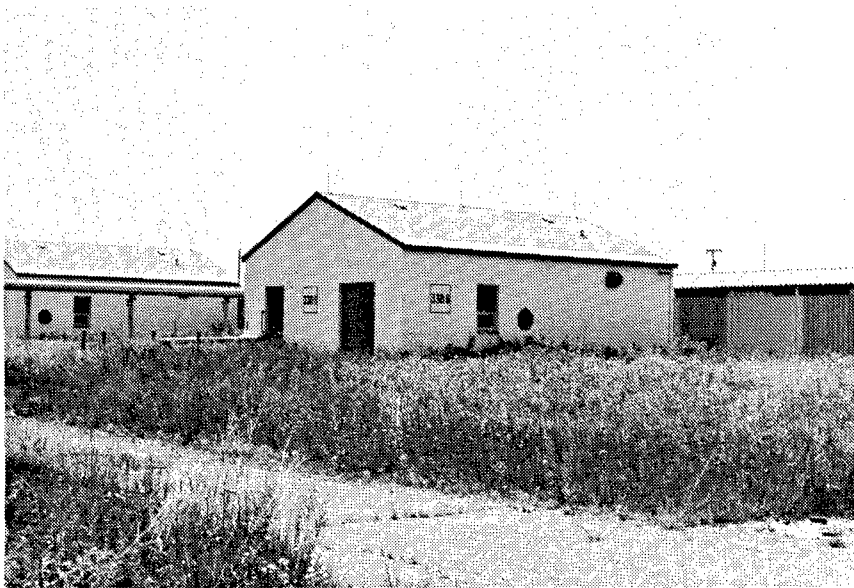


Figure 53. Building 338-B: Lead Styphnate Precipitation Building.



Figure 54. Overview of four Lead Styphnate Precipitation Buildings (#338A-D).

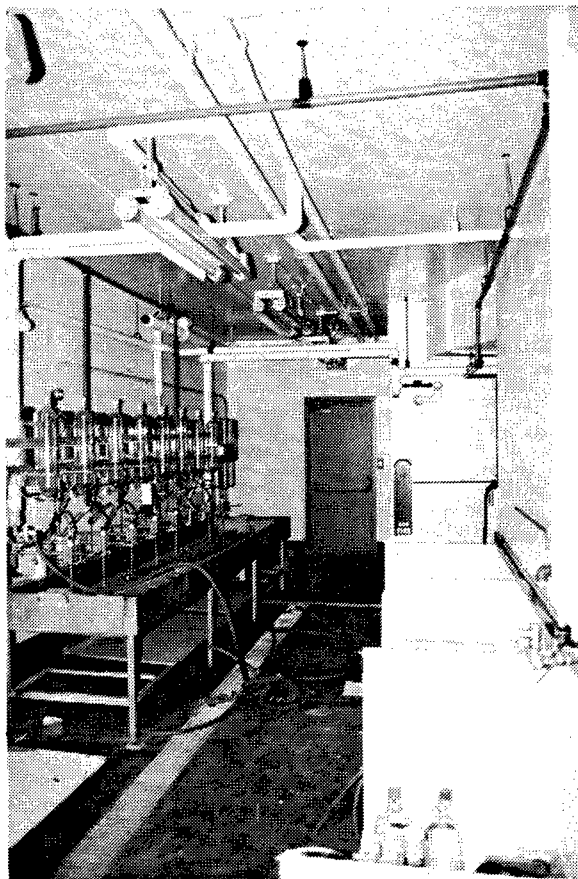


Figure 55. Building 338-A: Interior view of this Lead Styphnate Precipitation Building.

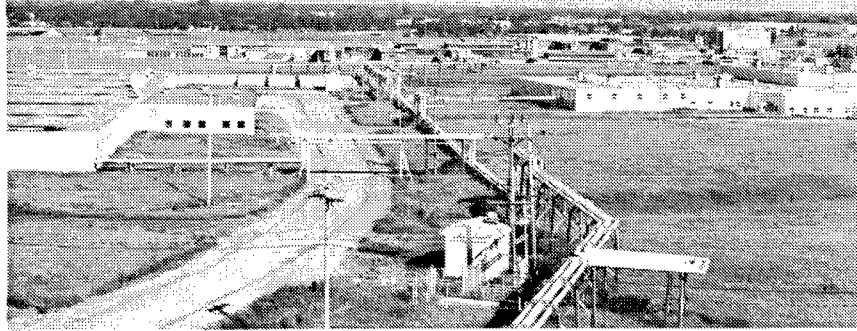


Figure 56. Overview of Buildings 101 and 115 (a Small Caliber Loading Plant and the Power House, respectively).

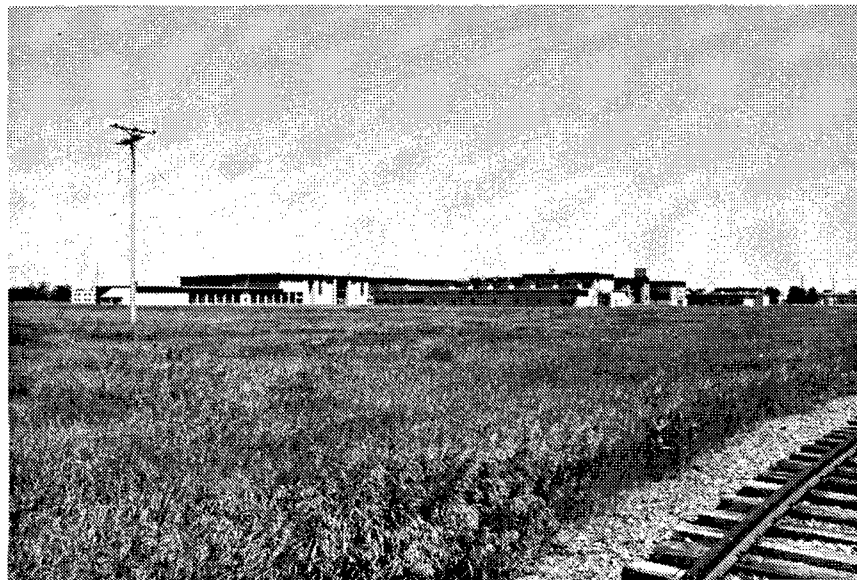


Figure 57. Building 101: Small Caliber Loading Plant building where .30 mm shells were manufactured.

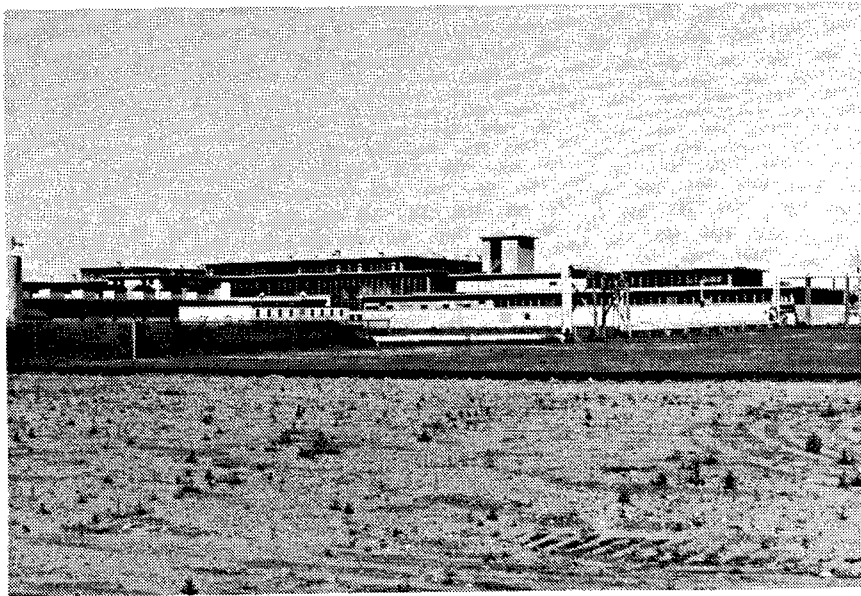


Figure 58. Building 102: Small Caliber Loading Plant building where .30 mm shells were manufactured.



Figure 59. Building 102: Another view of this Small Caliber Loading Plant building where .30 mm shells were manufactured.

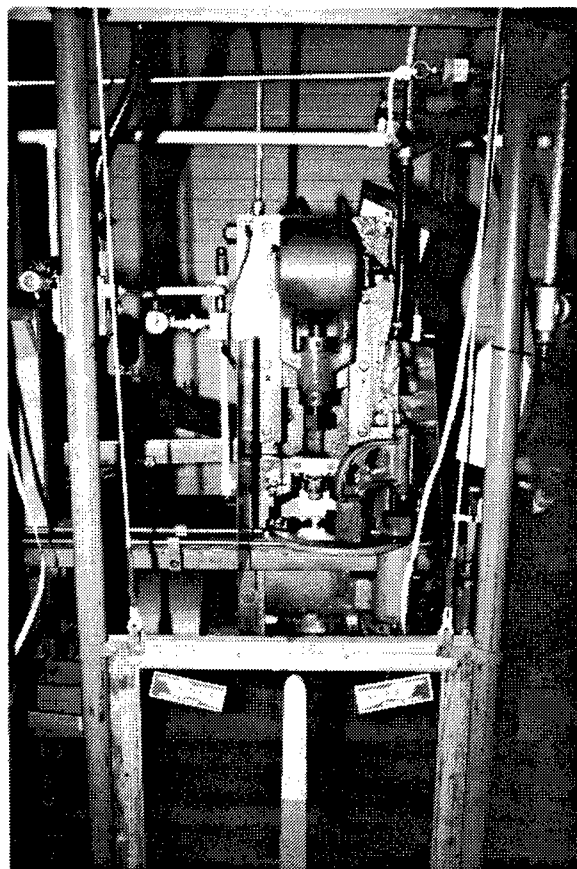


Figure 60. Building 102: Tracer Charge Machine manufactured in 1953 by the L.F. Fales Machine Company.

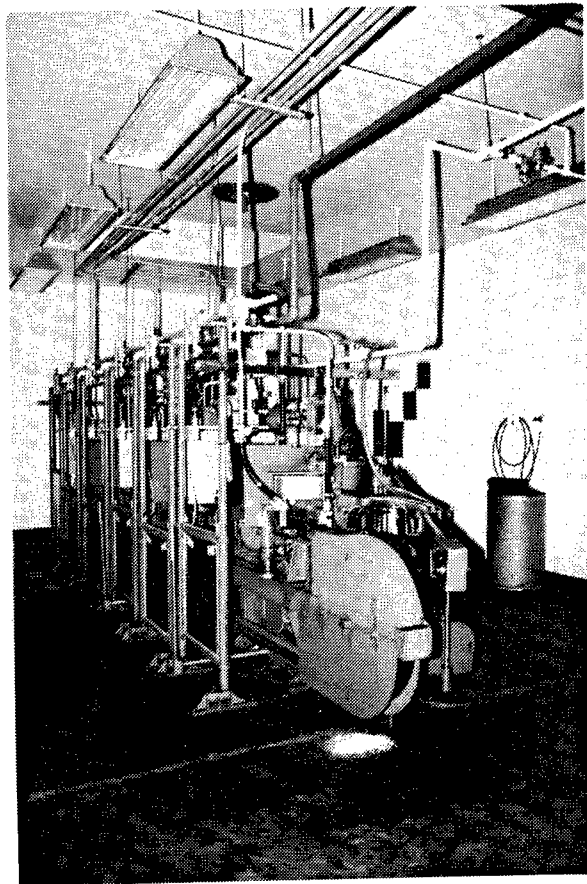


Figure 61. Building 102: Tracer Charge Stations.



Figure 62. Building 102: Tumbling Barrel (bullet polisher in Tracer Area) manufactured in 1952 by the Hupp Corporation.

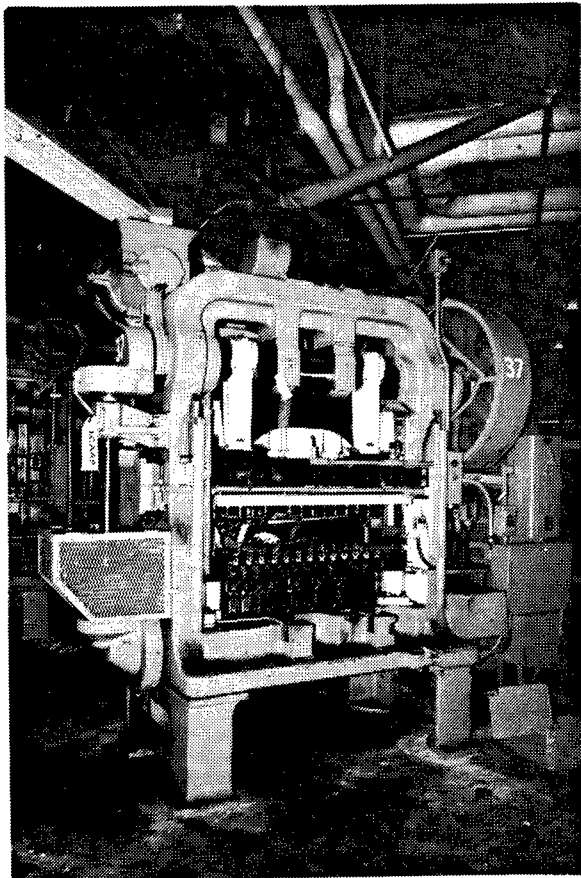


Figure 63. Building 102: Bullet Assembly Machine manufactured in 1952 by Waterbury Farrel.

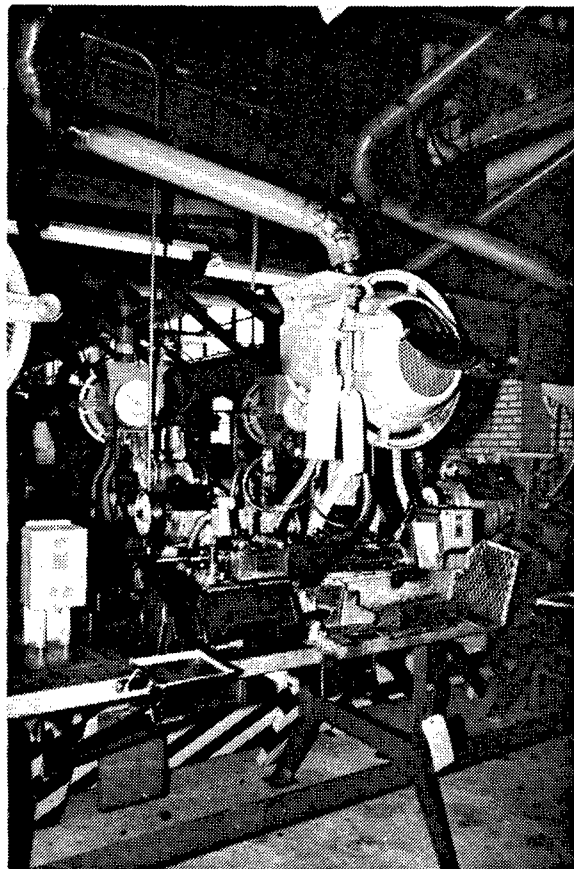


Figure 64. Building 102: Tracer Trim Machine manufactured in 1952 by the Fidelity Machine Company, Incorporated.

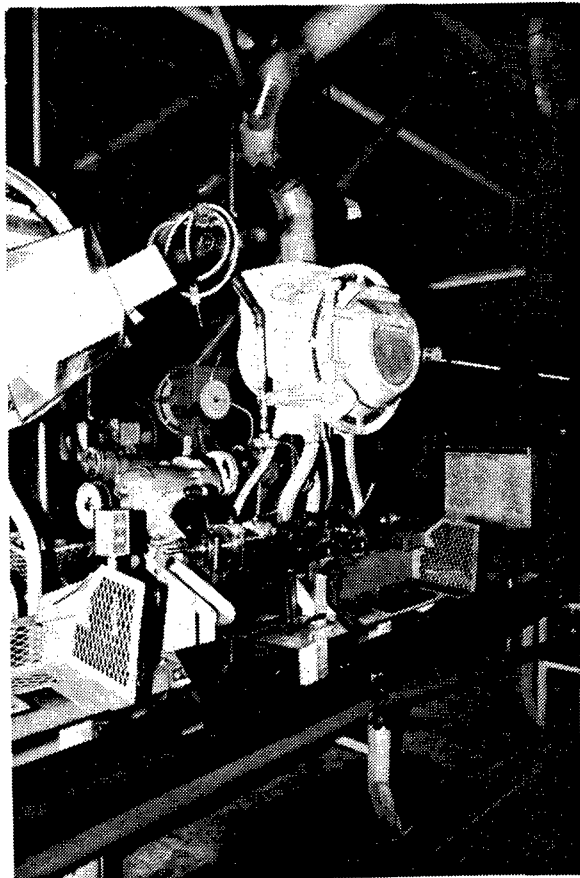


Figure 65. Building 102: Bullet Trim Machine manufactured in 1952 by the Fidelity Machine Company, Incorporated.

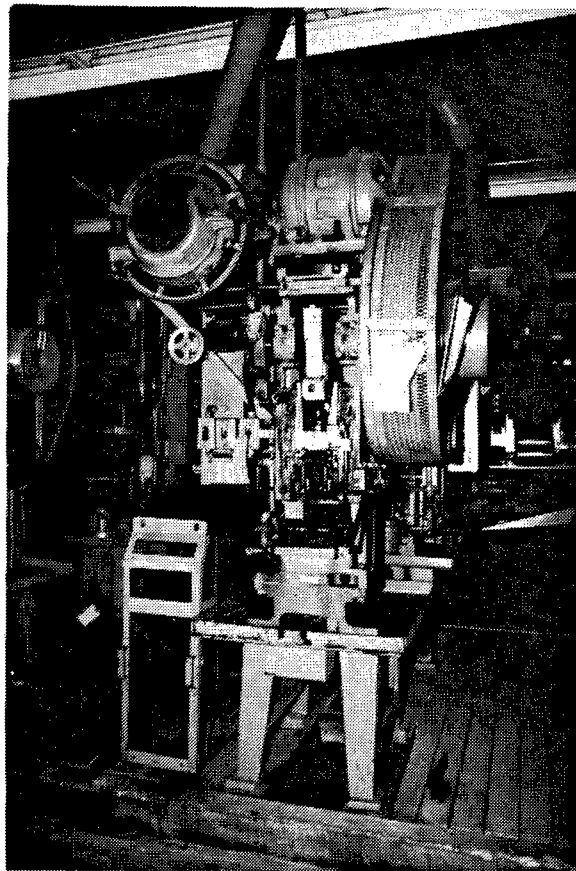


Figure 66. Building 102: Bullet Draw Machine manufactured in 1952 by E.W. Bliss Company.

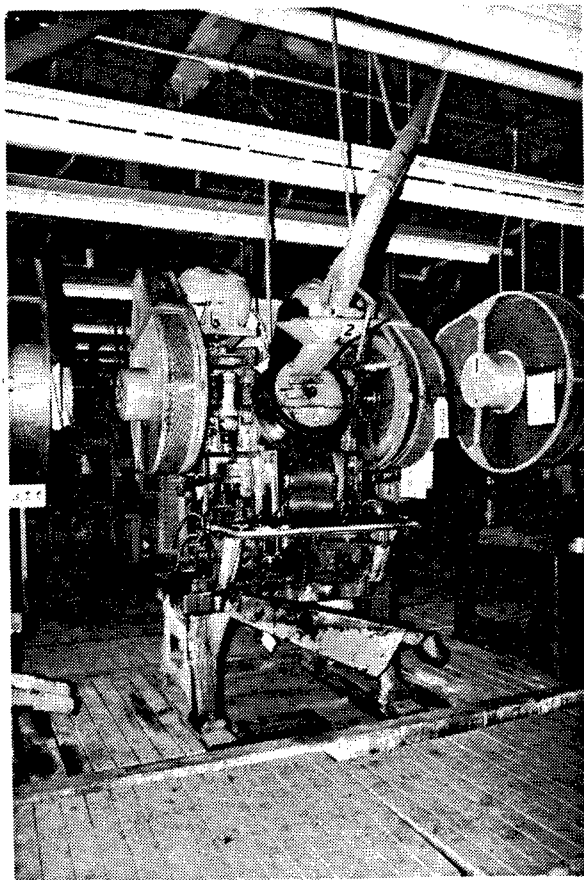


Figure 67. Building 102: Bullet Draw Machine manufactured in 1941 by E.W. Bliss Company.

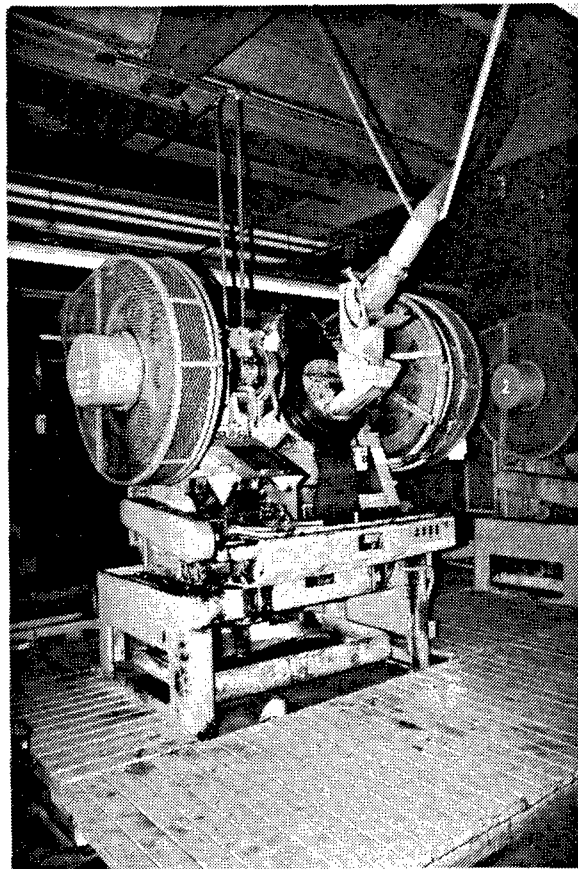


Figure 68. Building 102: First Case Draw manufactured in 1941 by the E.W. Bliss Company.

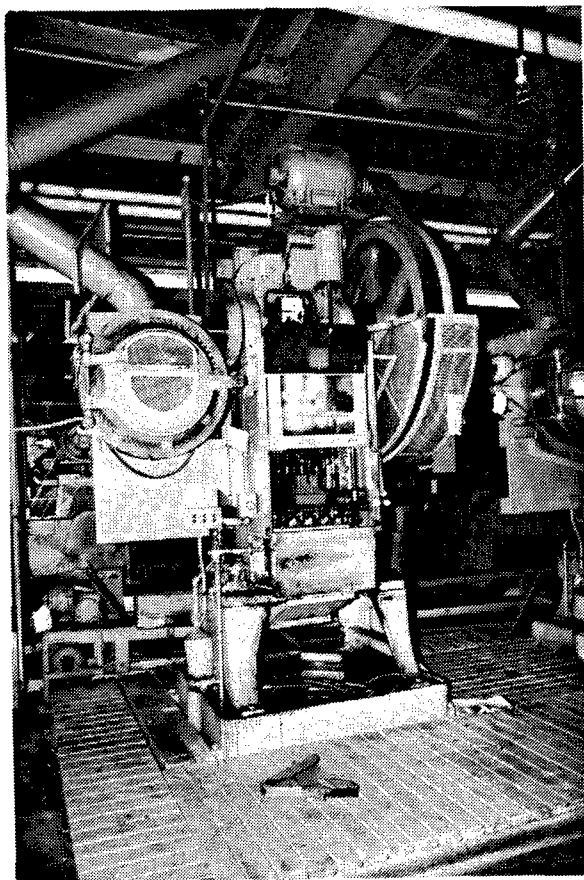


Figure 69. Building 102: Second Case Draw manufactured in 1942 by the E.W. Bliss Company.

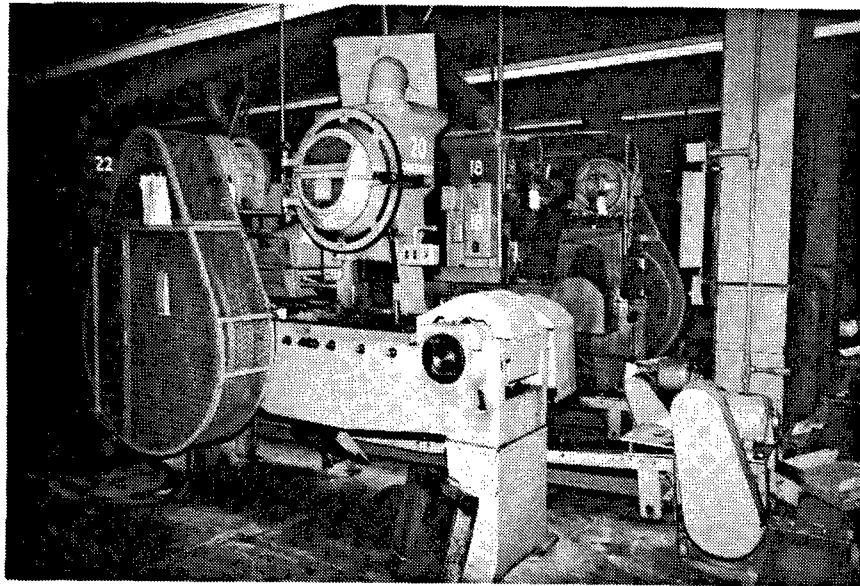


Figure 70. Building 102: Case Pocket (Bumping) manufactured in 1942 by the Jarecki Machine and Tool Company.

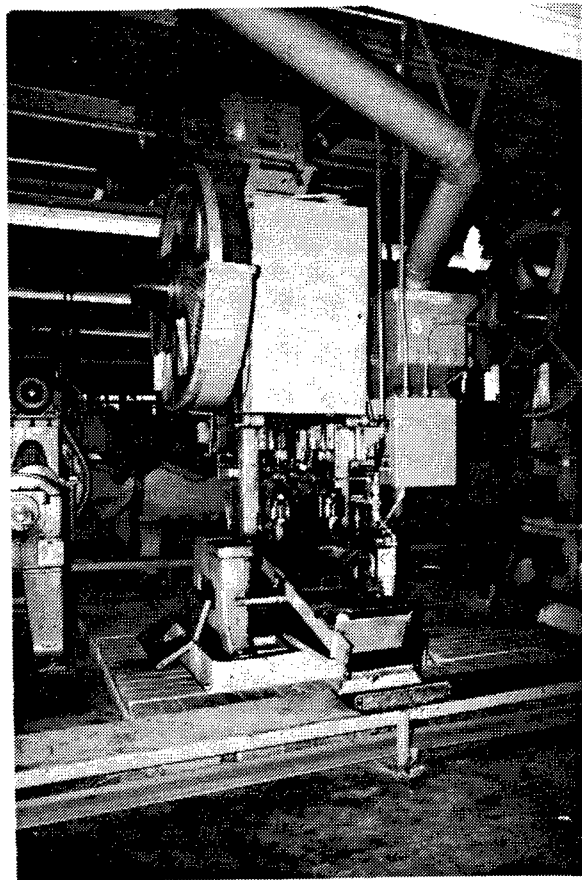


Figure 71. Building 102: Third Case Draw manufactured in 1942 by the E.W. Bliss Company.

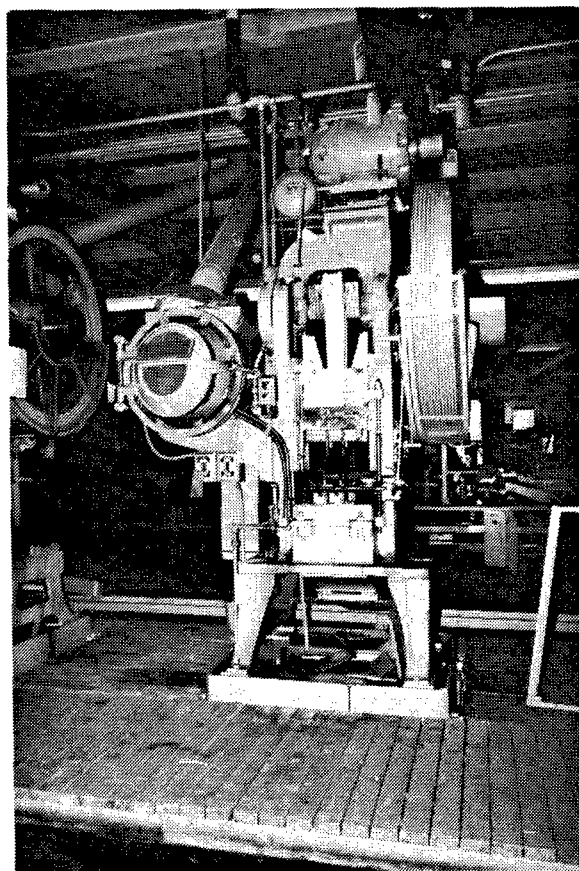


Figure 72. Building 102: Fourth Draw manufactured in 1952 by the E.W. Bliss Company.

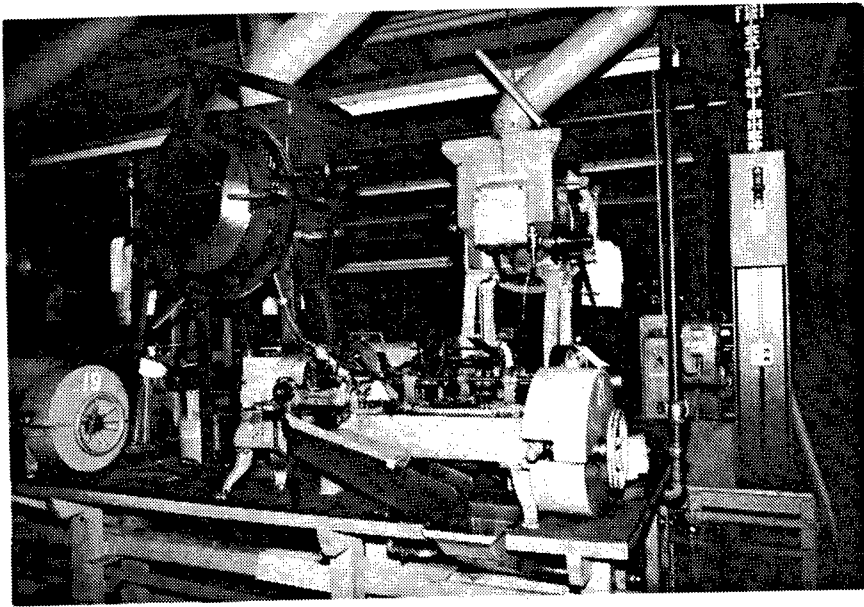


Figure 73. Building 102: First Case Trim manufactured in 1939 by the Peters Engineering Company.

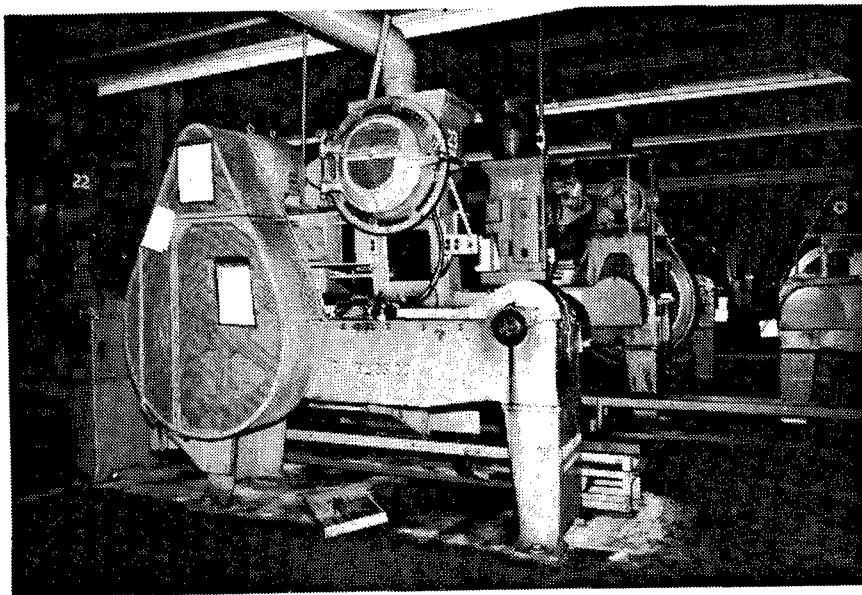


Figure 74. Building 102: Case Head Turn manufactured in 1941 by Jarecki Machine and Tool Company.

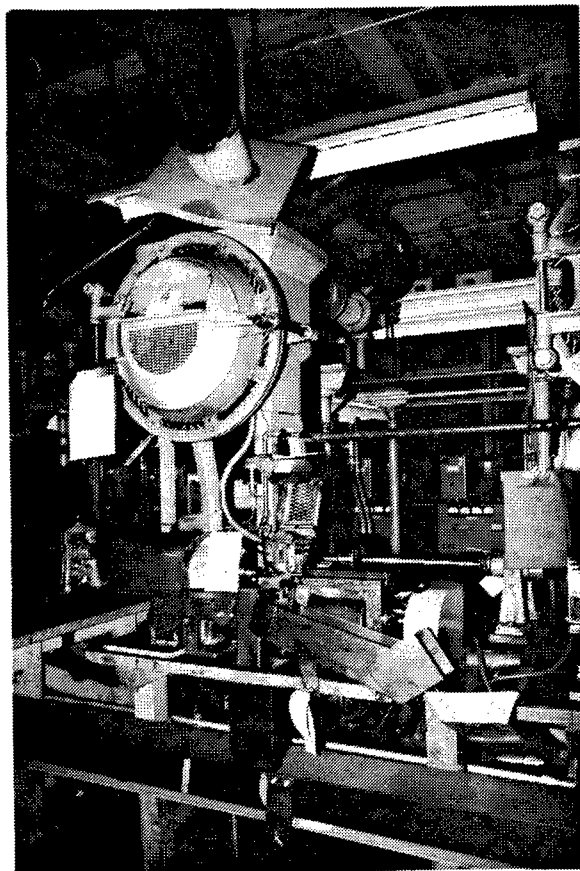


Figure 75. Building 102: Case Head Turn manufactured in 1942 by Owens-Illinois Glass.

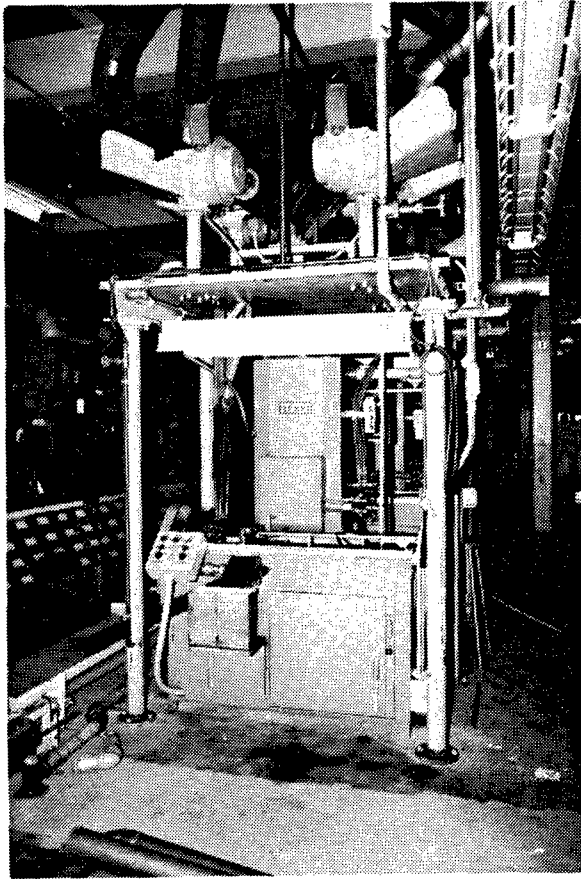


Figure 76. Building 102: TOCCO Annealers manufactured in 1968 by Park Ohio Industries.

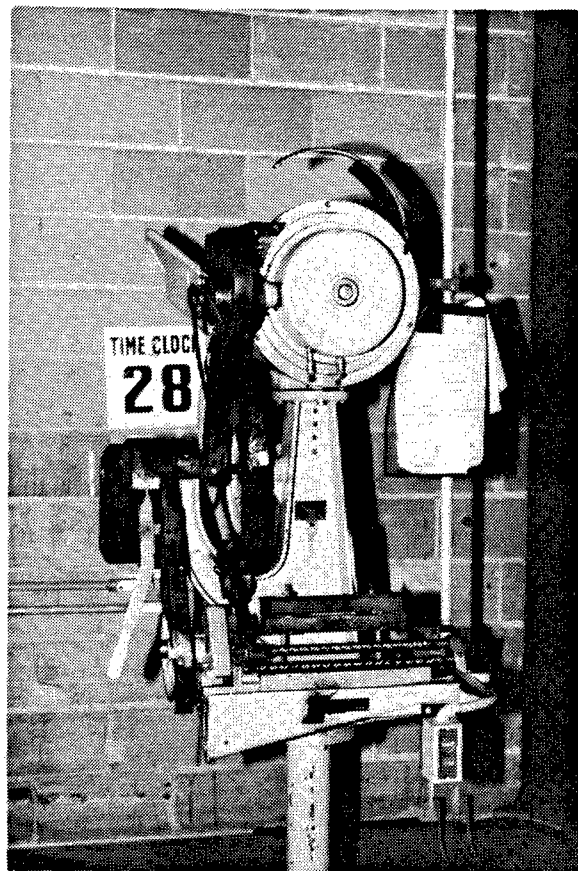


Figure 77. Building 102: Visual Inspection Machine manufactured in 1942 by Fidelity Machine Company.

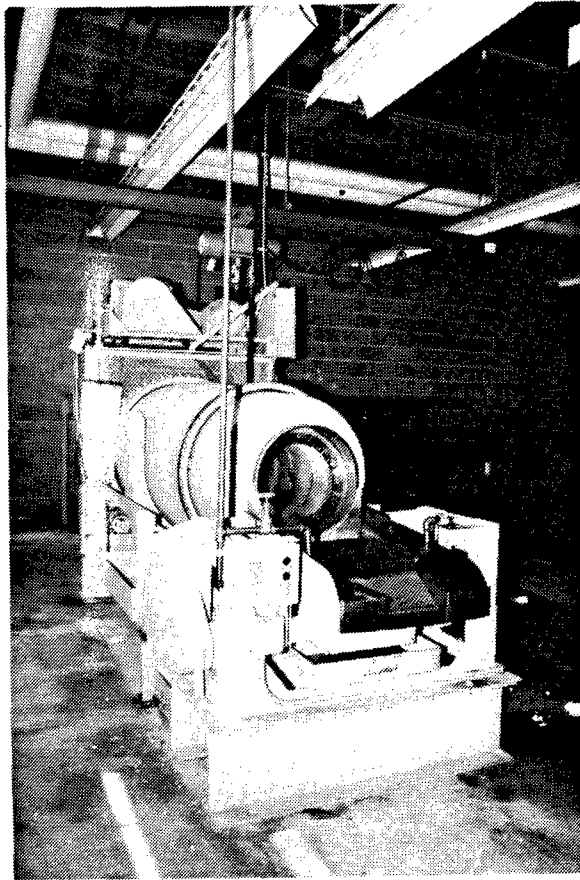


Figure 78. Building 102: Tracer Bullet Polisher manufactured in 1952 by N. Ranschoff, Incorporated.

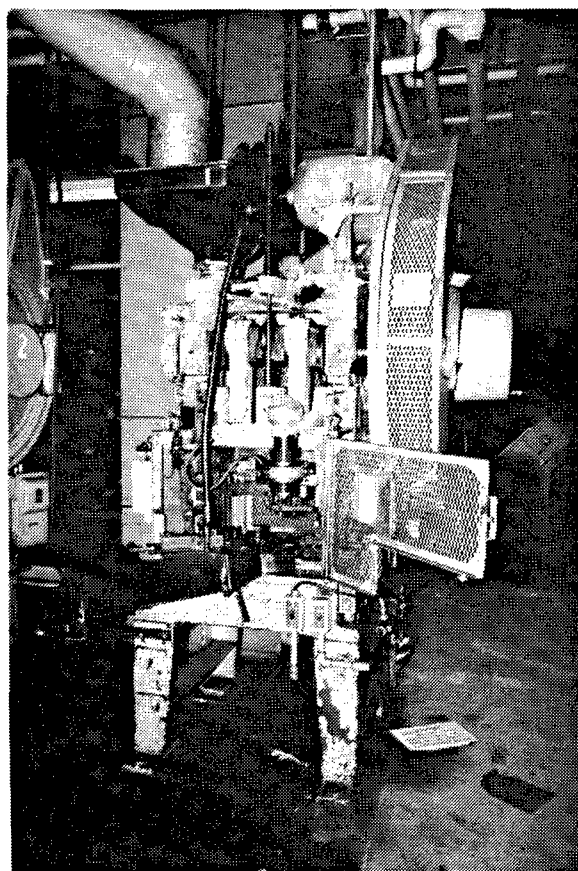


Figure 79. Building 102: Taper and Plug Machine manufactured in 1942 by the E.W. Bliss Company.

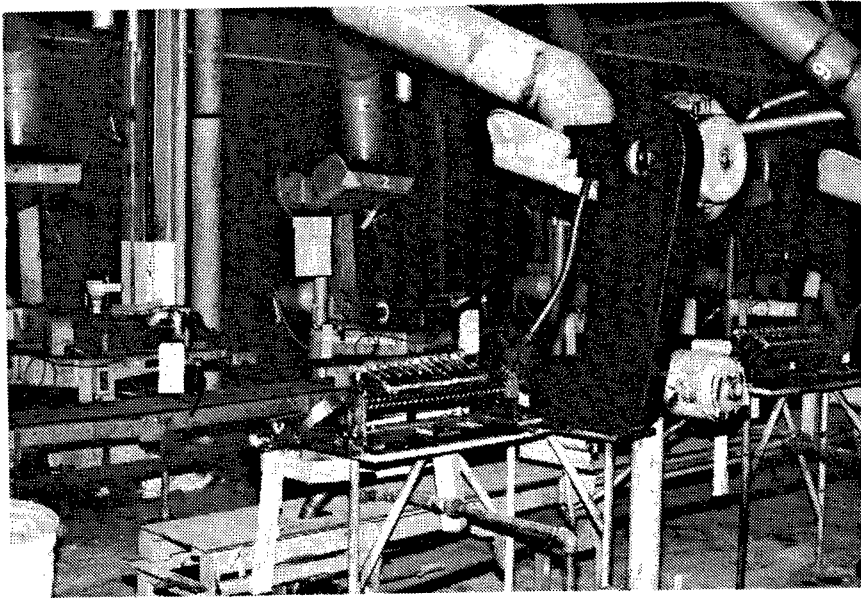


Figure 80. Building 102: Mouth and Neck Anneal Machine manufactured in 1954 by the St. Louis Ordnance Plant.

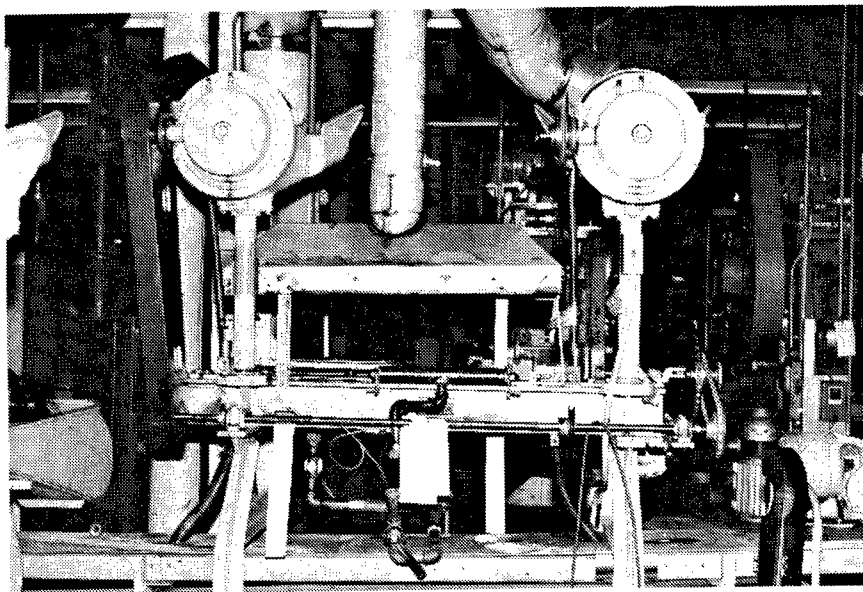


Figure 81. Building 102: Mouth and Neck Anneal Machine manufactured in 1942 by the Peters Engineering Company.

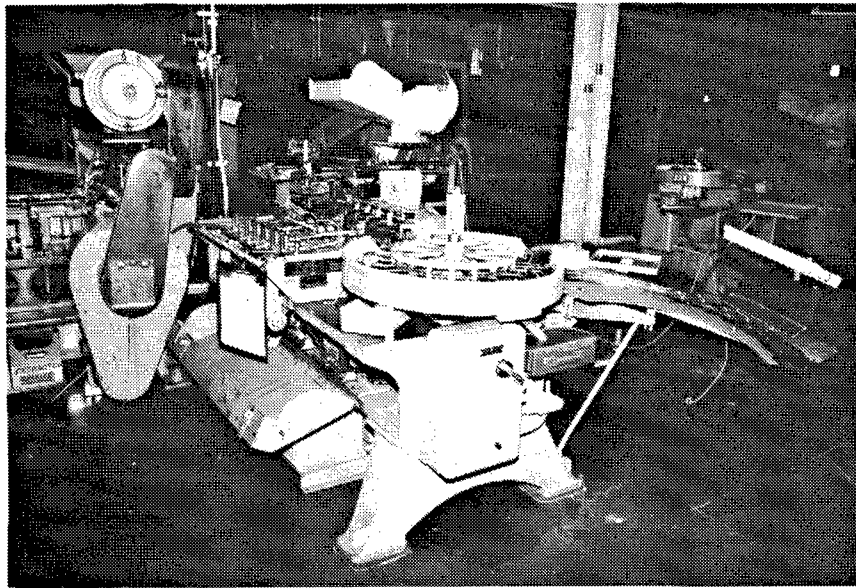


Figure 82. Building 102: Gage and Weigh Machine manufactured in 1942 by Star Tool and Die.

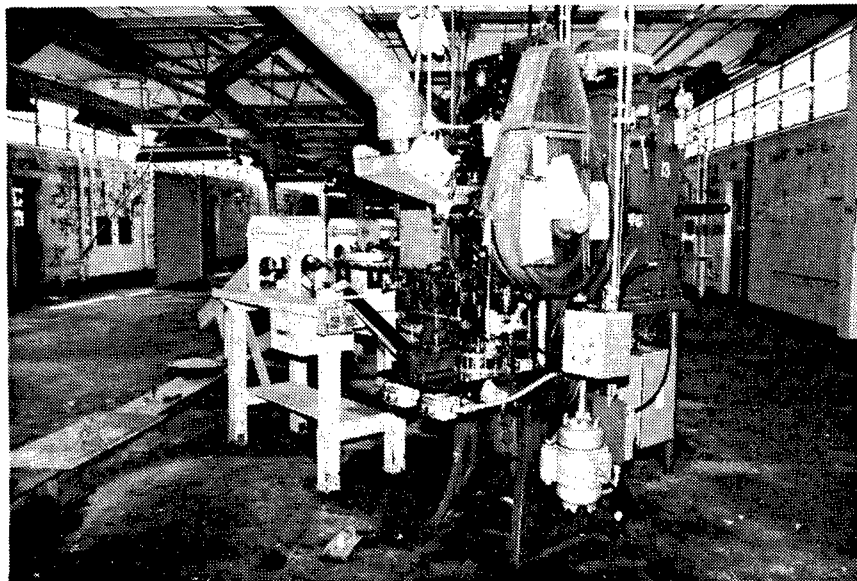


Figure 83. Building 102: Primer Insert manufactured in 1951 by V&O Press.



Figure 84. Building 102: Lindberg Furnaces manufactured in 1941 by Lindberg Engineering Company.

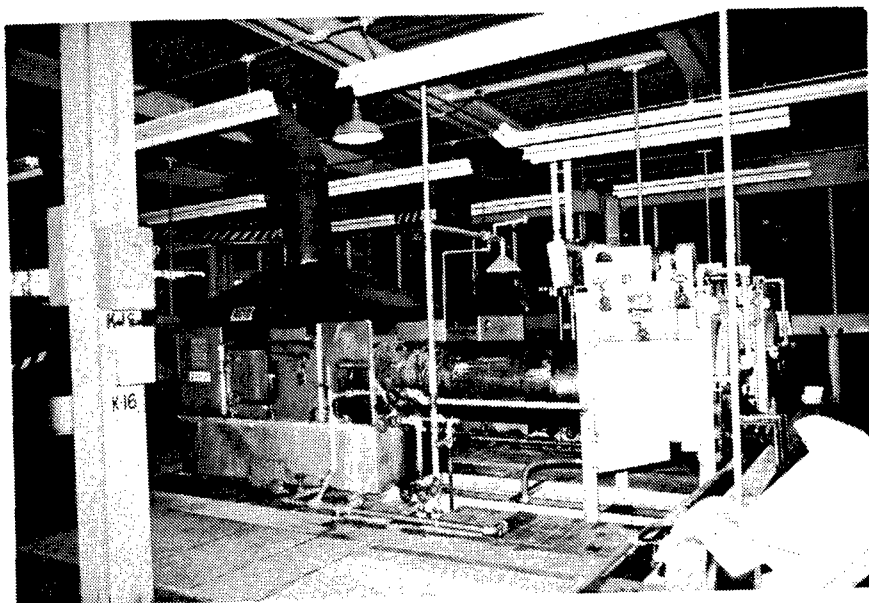


Figure 85. Building 102: Pickler Machine manufactured in 1941 by G.S. Blakeslee and Company.

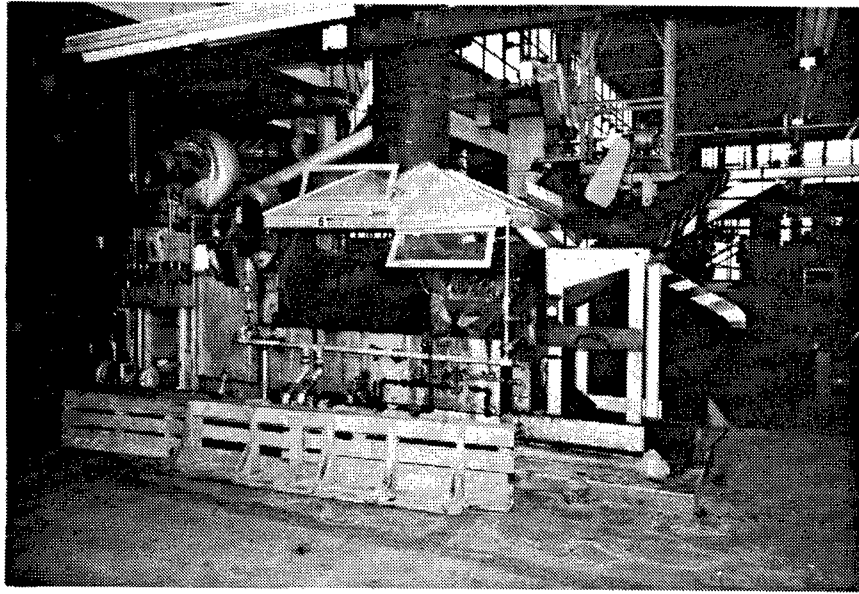


Figure 86. Building 102: Case Dryer manufactured in 1942 by the Colt Manufacturing Company.

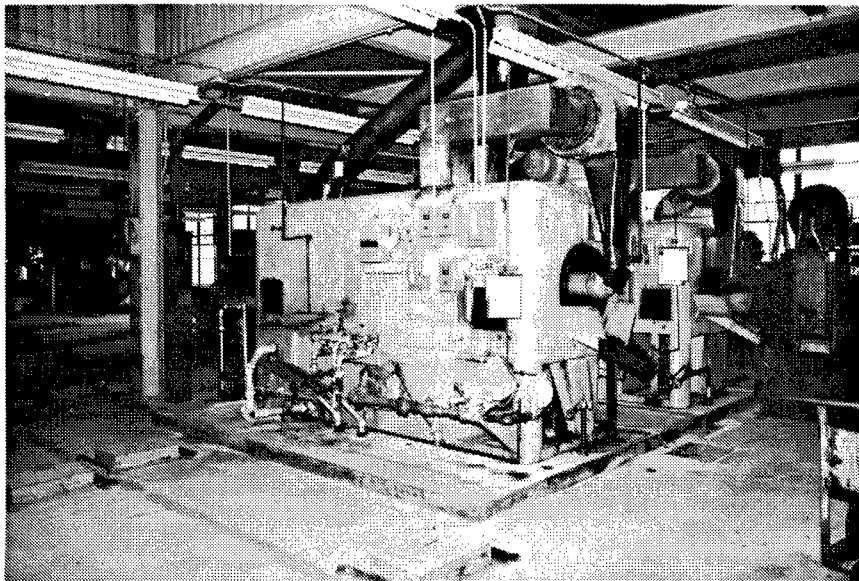


Figure 87. Building 102: Lube Machine manufactured in 1952 by the Cincinnati Clean and Finish Company.

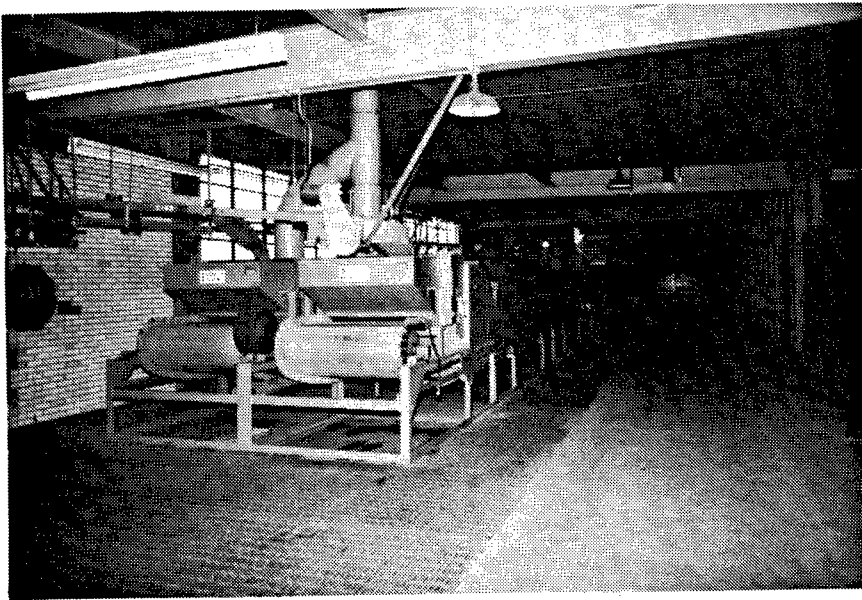


Figure 88. Building 102: Dispatch Oven manufactured in 1954 by Dispatch Oven Company.

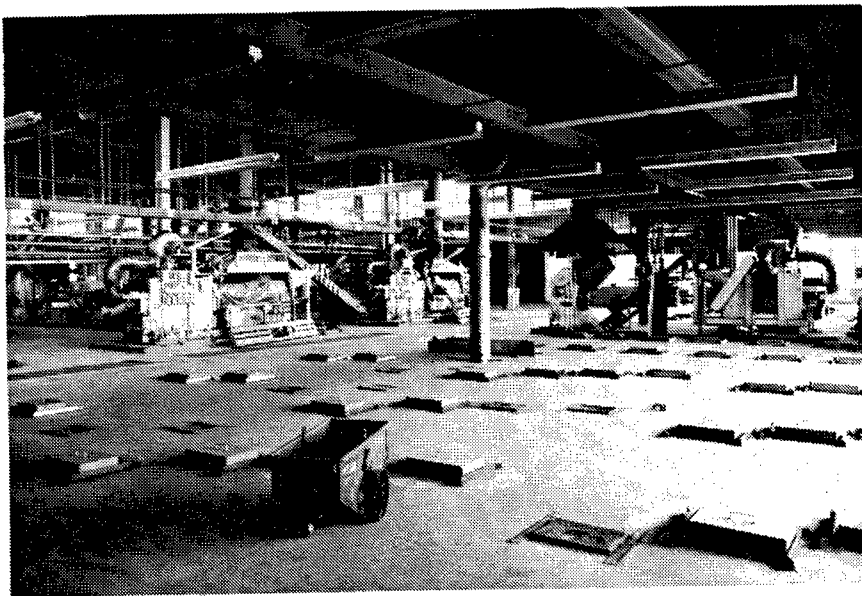


Figure 89. Building 102: Interior view of the in-place equipment on the second floor.

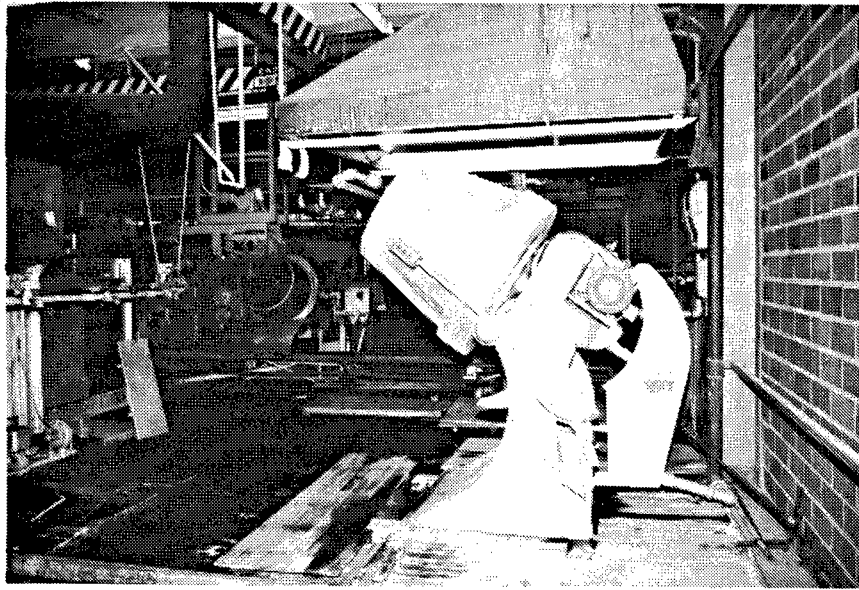


Figure 90. Building 102: Rumbler Washer manufactured in 1941 by the Baird Machine Company.

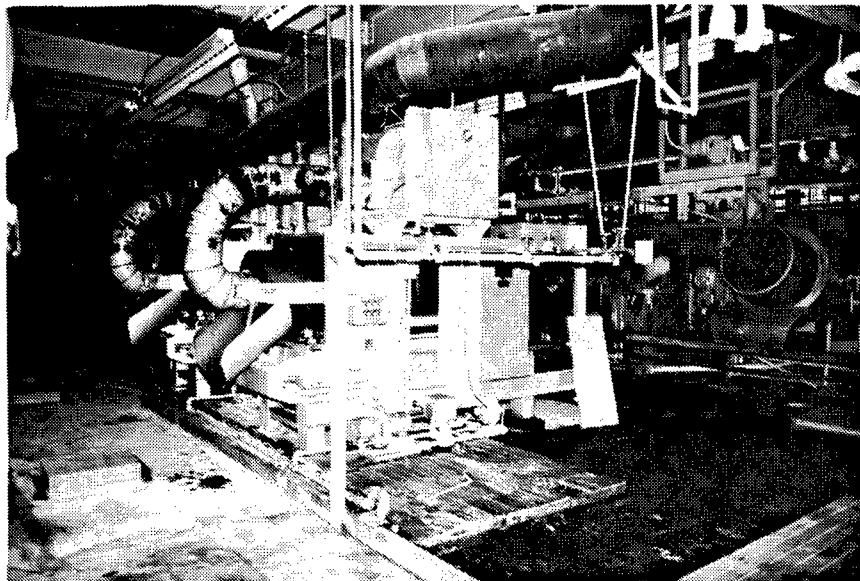


Figure 91. Building 102: Dryer manufactured in 1952 by Colt Manufacturing Company.

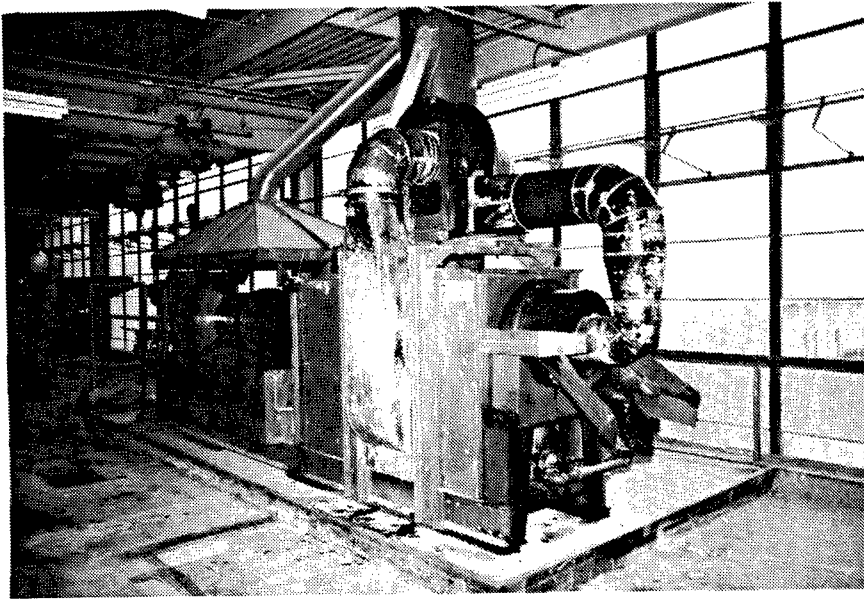


Figure 92. Building 102: Colt Autosan Dryer manufactured in 1952 by the Colt Manufacturing Company.

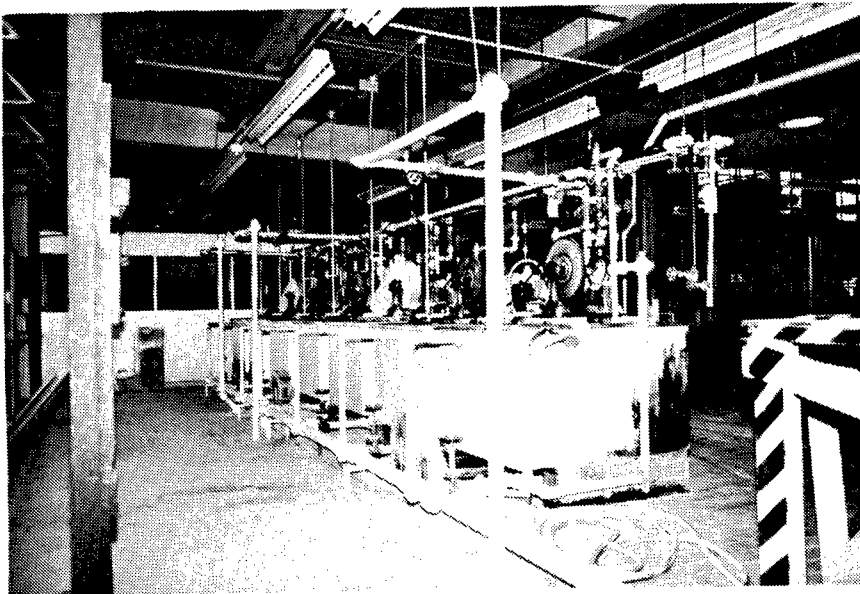


Figure 93. Building 102: Case and Bullet Soap Tanks.

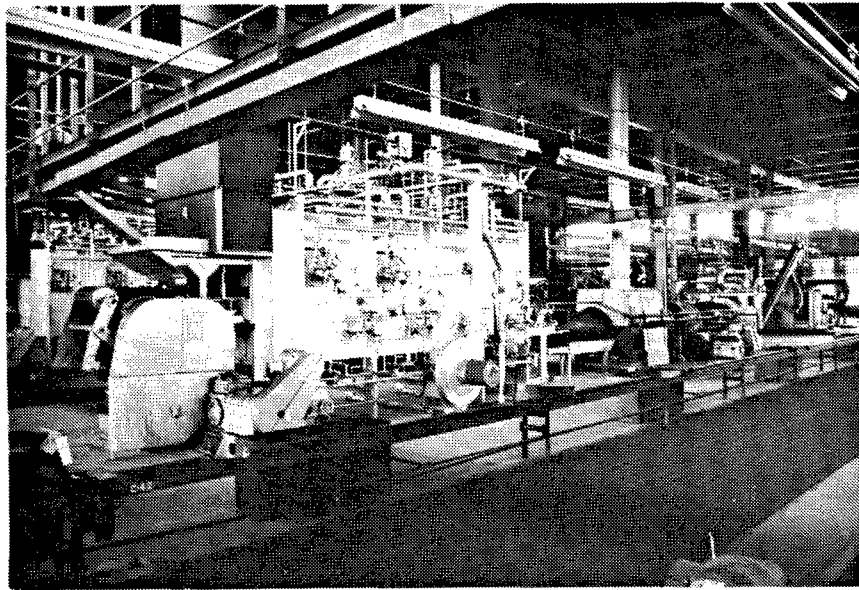


Figure 94. Building 102: Salem Furnace manufactured in 1951 by Salem Engineering.

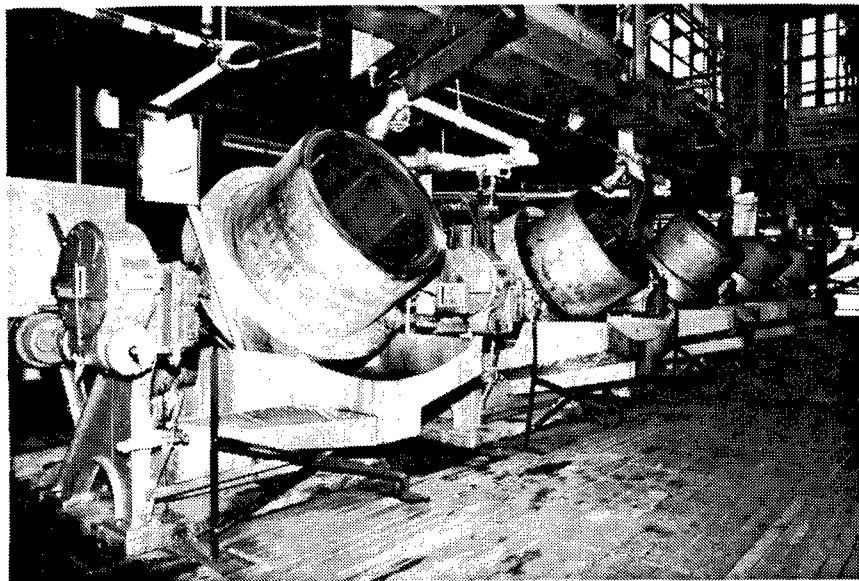


Figure 95. Building 102: Case Polish Rumbler manufactured in 1942 by Smith Drum and Company.

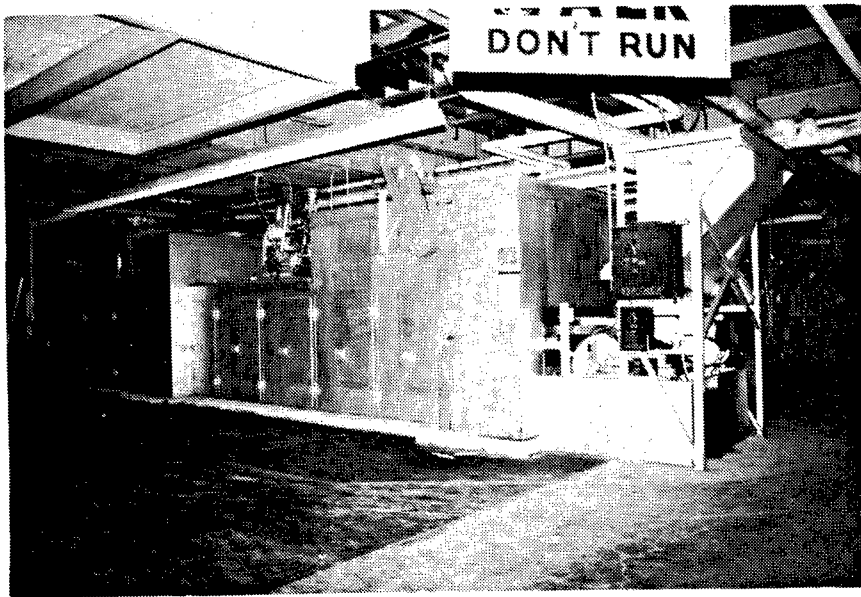


Figure 96. Building 102: Salem Furnace manufactured by Salem Engineering.

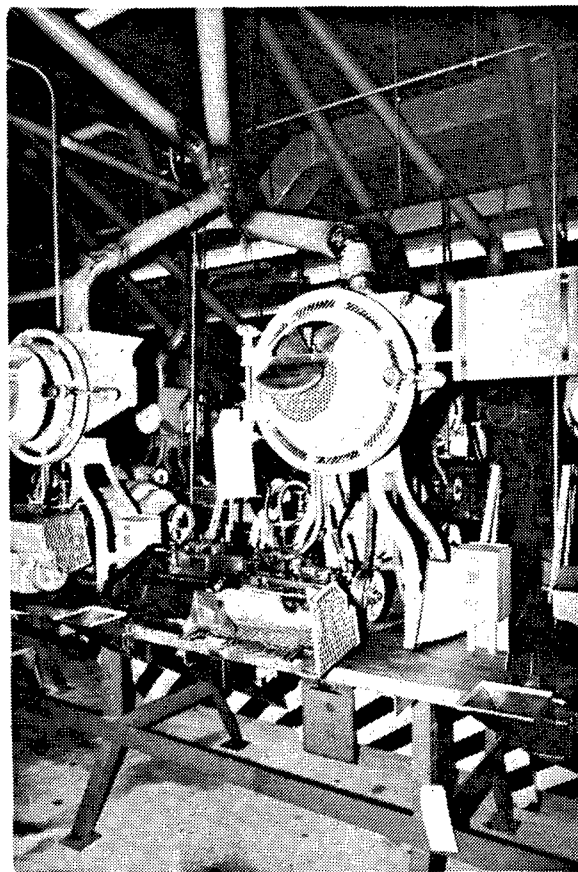


Figure 97. Building 102: Tracer Trim manufactured in 1952 by Fidelity Machine Company.

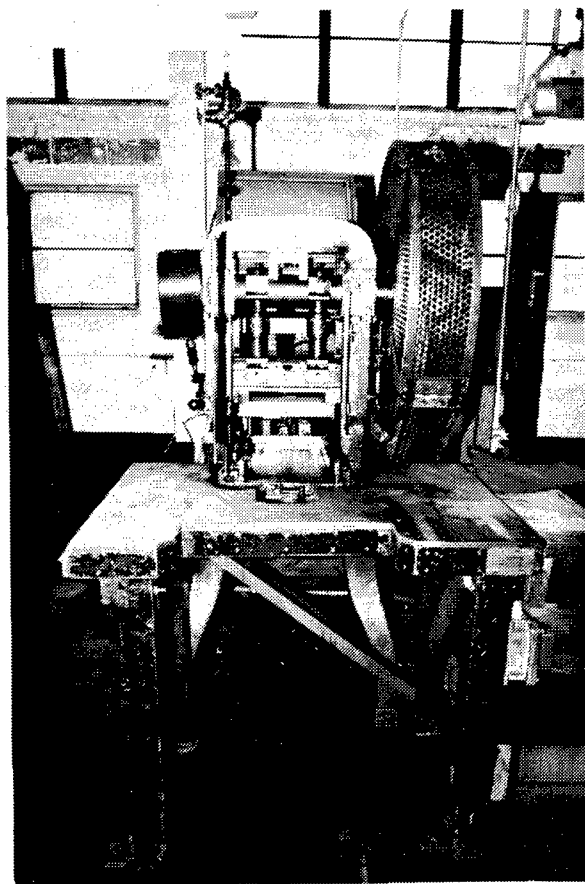


Figure 98. Building 102: Loading Press manufactured by Dupont-DeNemours and Company.

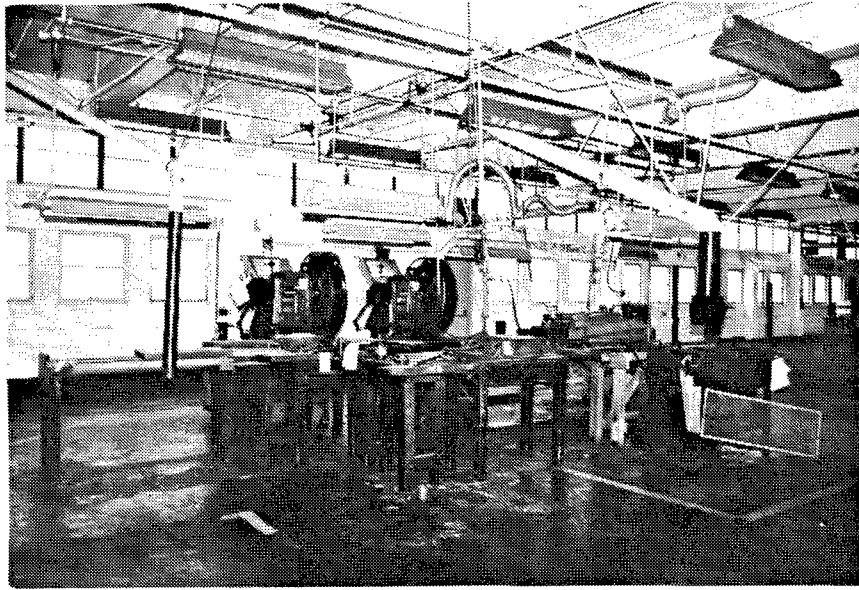


Figure 99. Building 102: Loading Station in the Loading Wing.

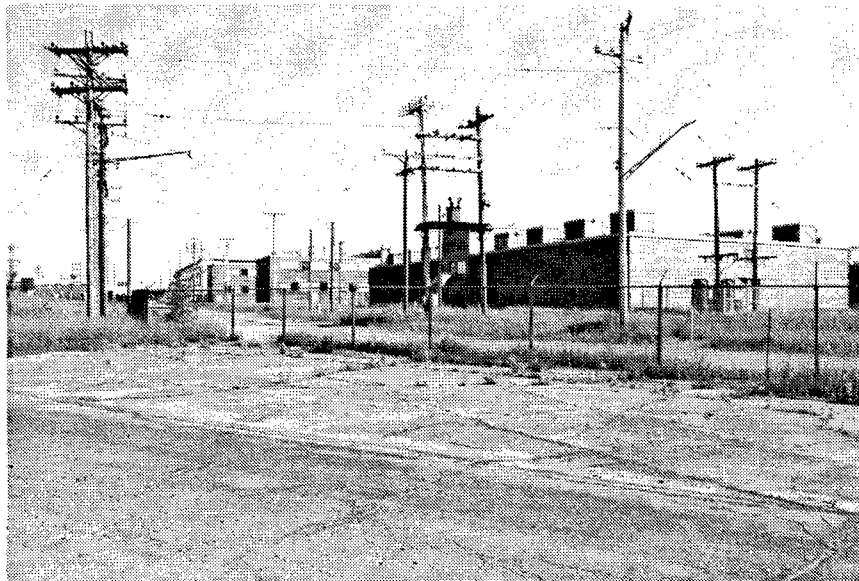


Figure 100. Building 501: Small Caliber Loading Building where .30 mm shells were manufactured.



Figure 101. Building 103: Small Caliber Loading Plant where .50 mm shells were manufactured.

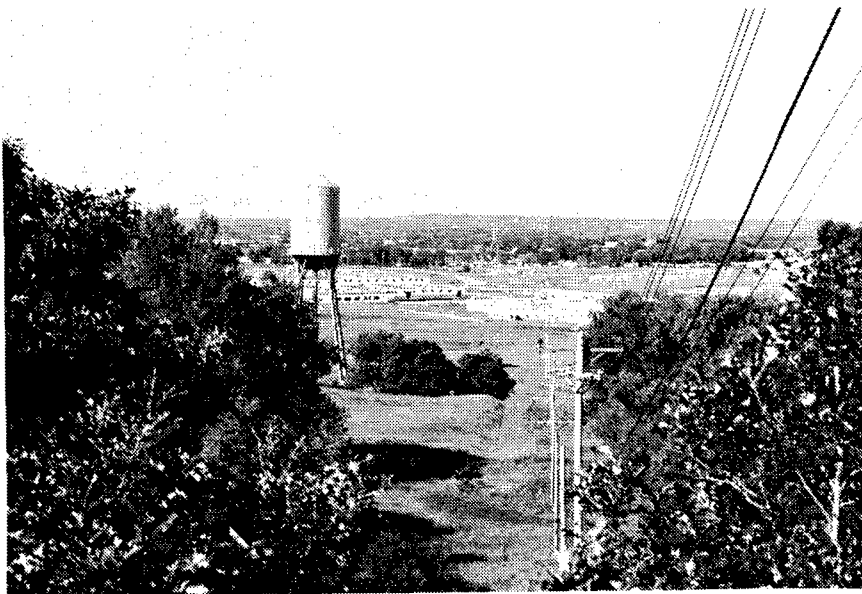


Figure 102. Overview of Buildings 503 and 594 (Small Caliber Loading Plant and the Machine Maintenance Shop, respectively) and a water tower.



Figure 103. Building 503: Southwest face of a Small Caliber Loading Plant where .50 mm shells were manufactured.



Figure 104. Building 503: Another view of this Small Caliber Loading Plant.

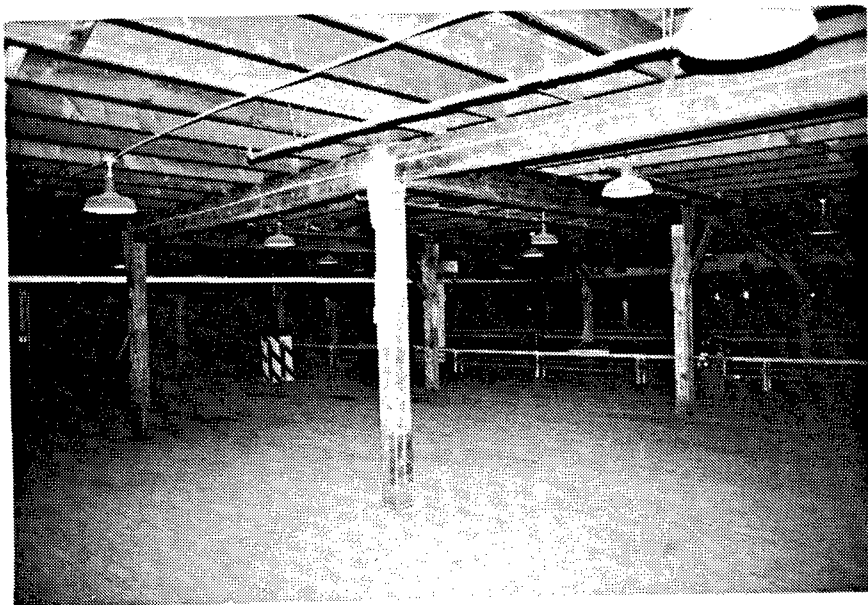


Figure 105. Building 503: Interior view of the second floor of this Small Caliber Loading Plant.

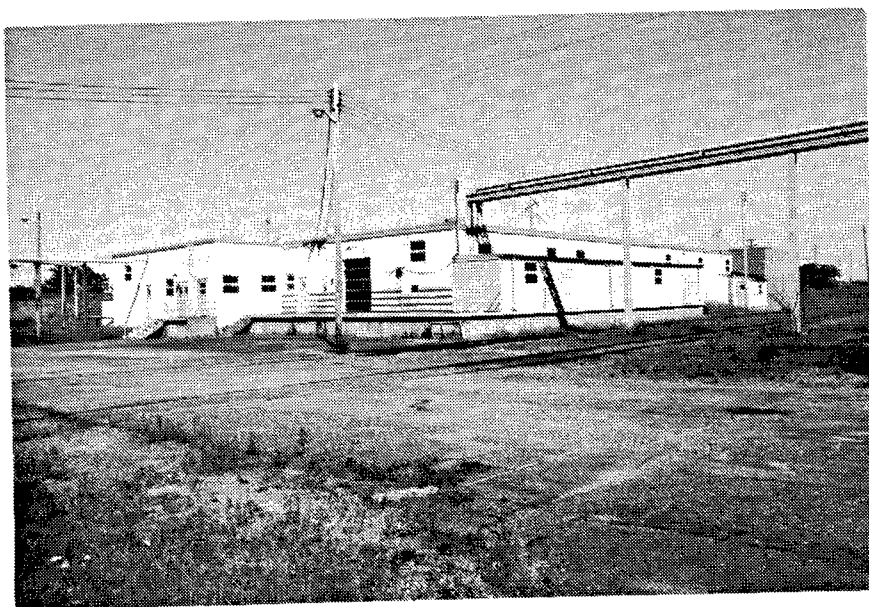


Figure 106. Building 589: Bullet pull-down and Salvage Building.

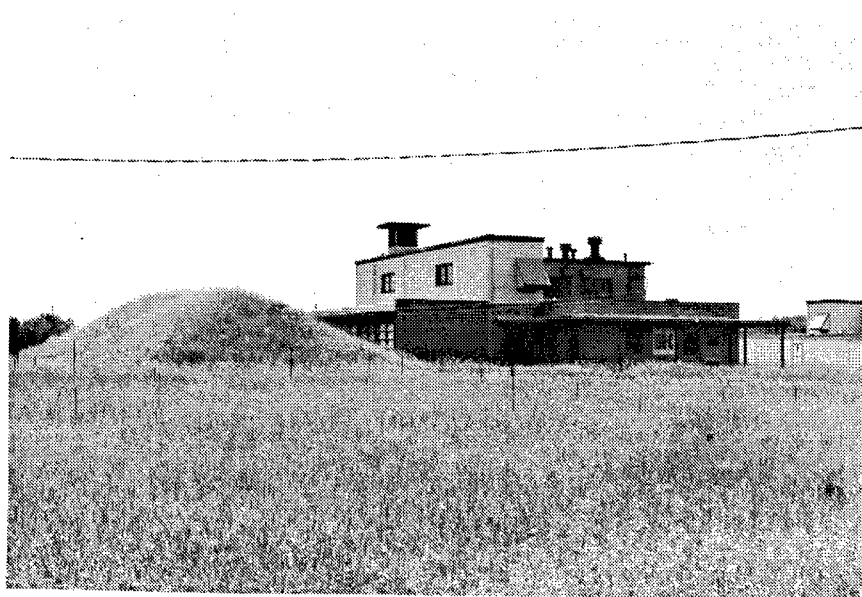


Figure 107. Building 138-C: Tracer and Igniter Building.



Figure 108. Building 192-B: Dryer Oven inside the P.R. Cake Drying House.



Figure 109. Building 192-B: Dryer Oven in the P.R. Cake Drying House.

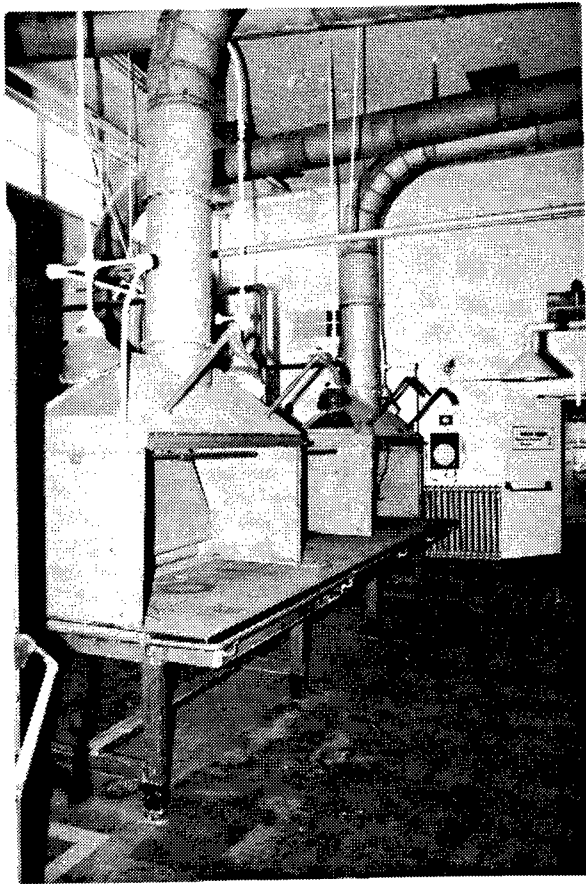


Figure 110. Building 138-A: Igniter Manufacturing.

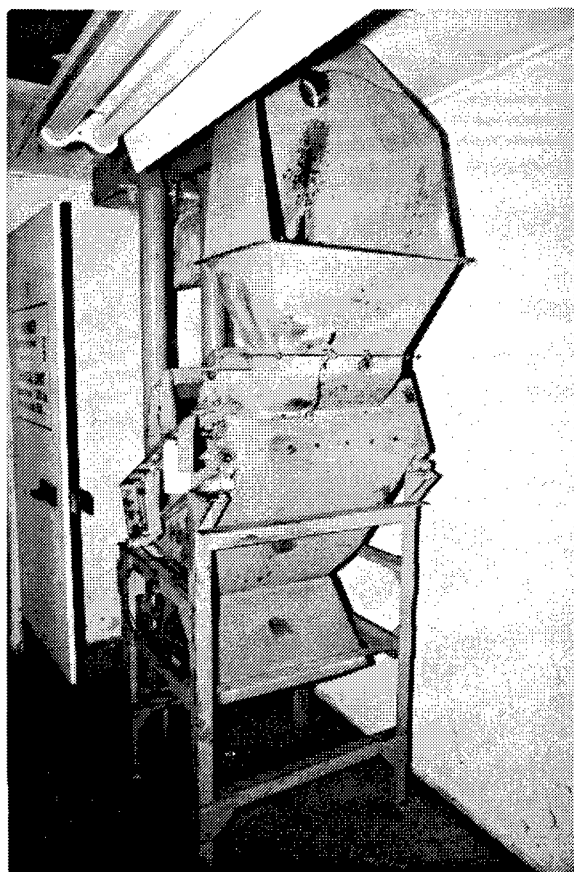


Figure 111. Building 138-A: Hummer that used barium nitrate and strontium peroxide in the Igniter Manufacturing building.

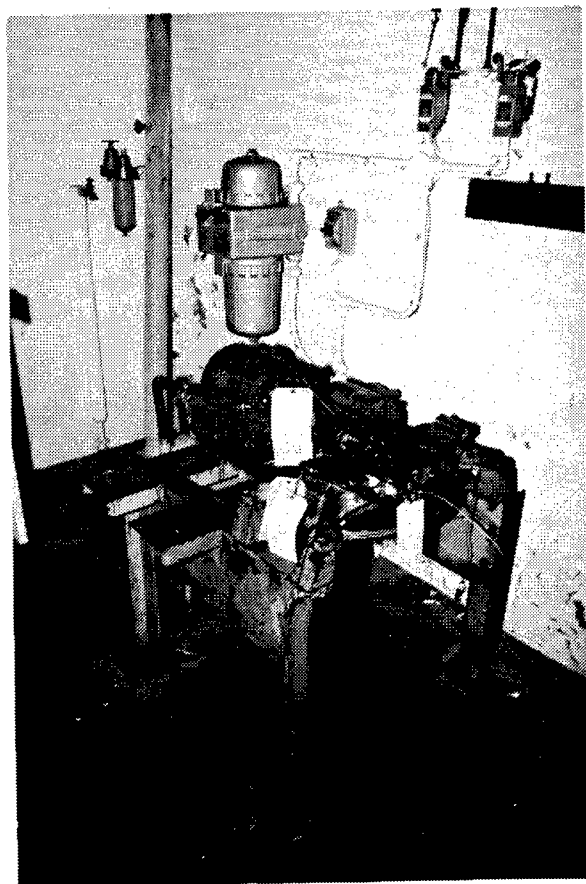


Figure 112. Building 138-A: Mikro Pulverizer.

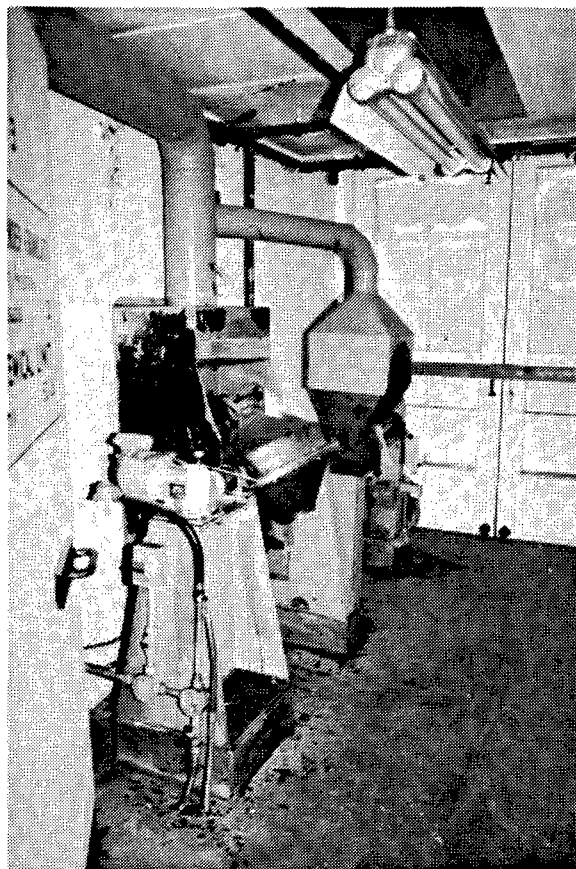


Figure 113. Building 138-A: Cone Blender and Granular machine.

SUPPORT FACILITIES FOR MANUFACTURING

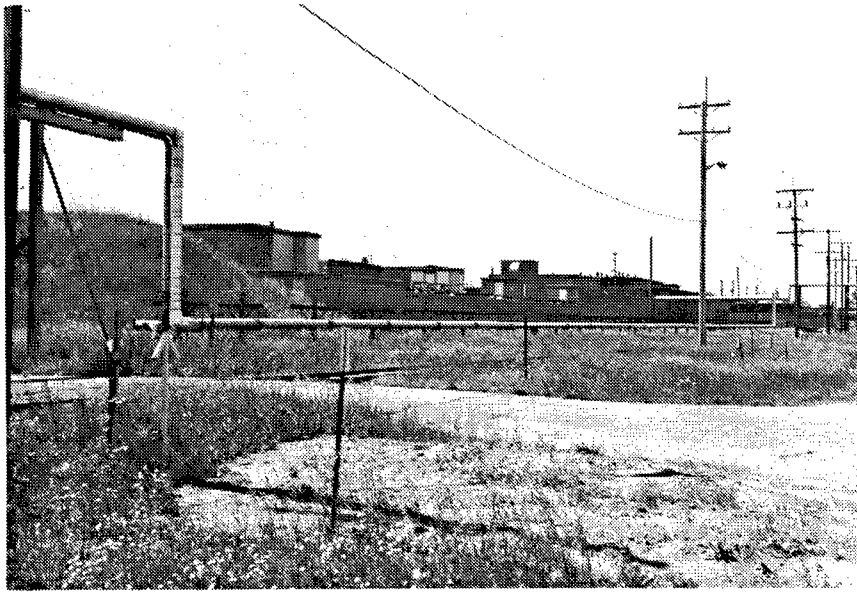


Figure 114. Building 108: Ballistic Testing/Ammunition Quality Facility. The quality of ammunition was tested in this facility.

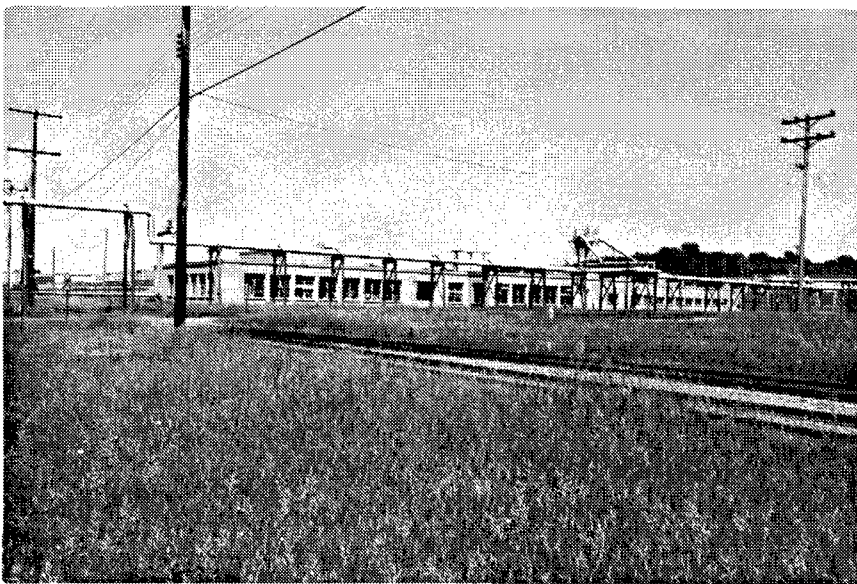


Figure 115. Building 108: Southwest face of the Ballistic Testing/Ammunition Quality Facility.

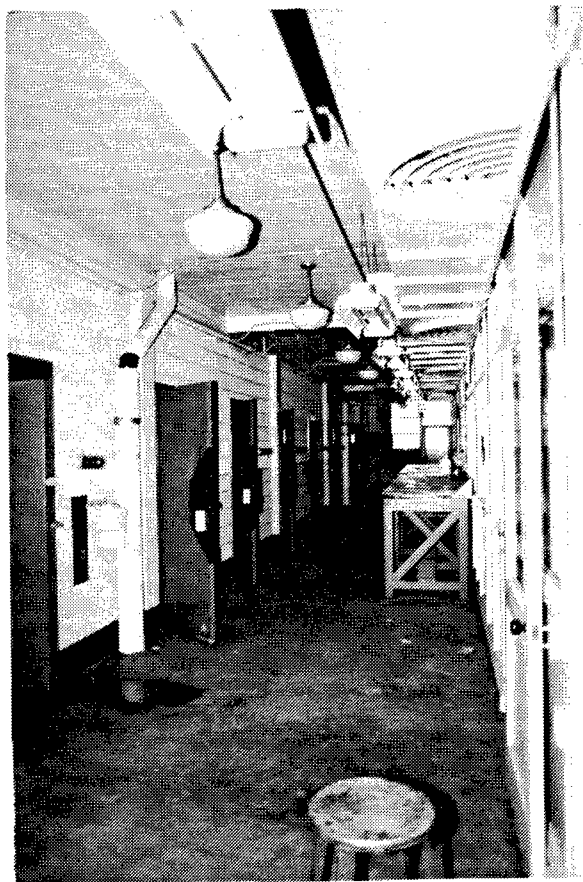


Figure 116. Building 108: Interior view of the Ballistic Testing/Ammunition Quality Facility.



Figure 117. Building 121-B: Propellant Powder Sampling Building.

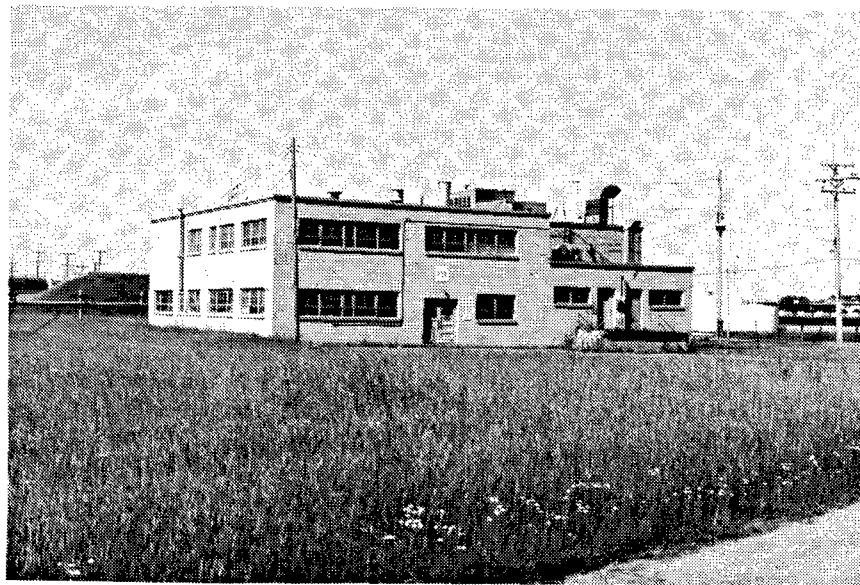


Figure 118. Building 151: Metallurgical Chemical Laboratory.

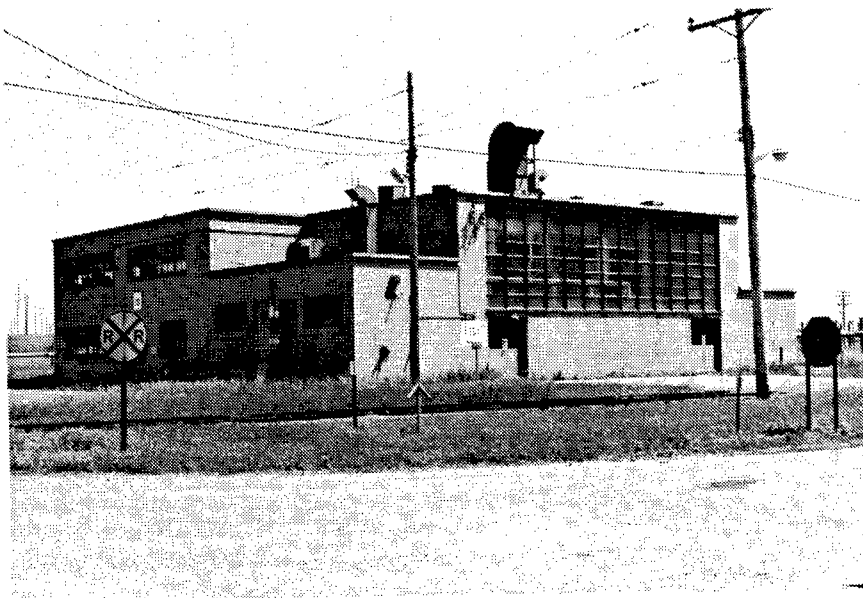


Figure 119. Building 151: Metallurgical Chemical Laboratory.

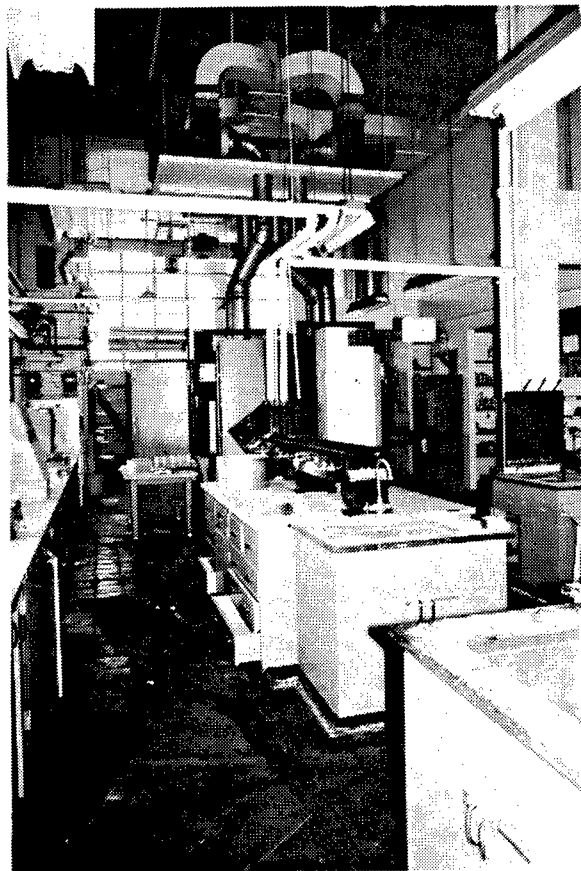


Figure 120. Building 151: Interior view of the Metallurgical Chemical Laboratory.

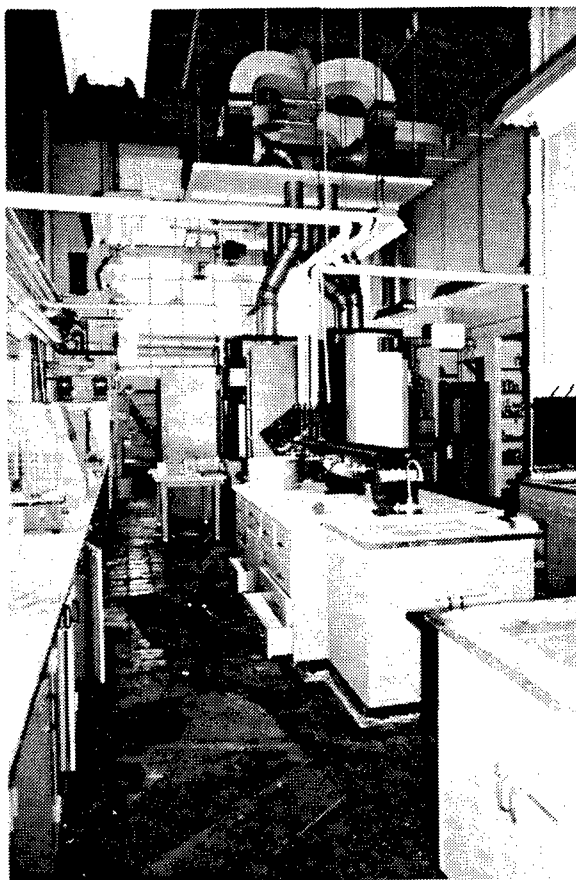


Figure 121. Building 151: Another interior view of the Metallurgical Chemical Laboratory.



Figure 122. Building 308: Indoor Firing Range.



Figure 123. Building 308: Interior view of the test area in the Indoor Firing Range.



Figure 124. Building 308: Interior view of the firing room in the Indoor Firing Range.

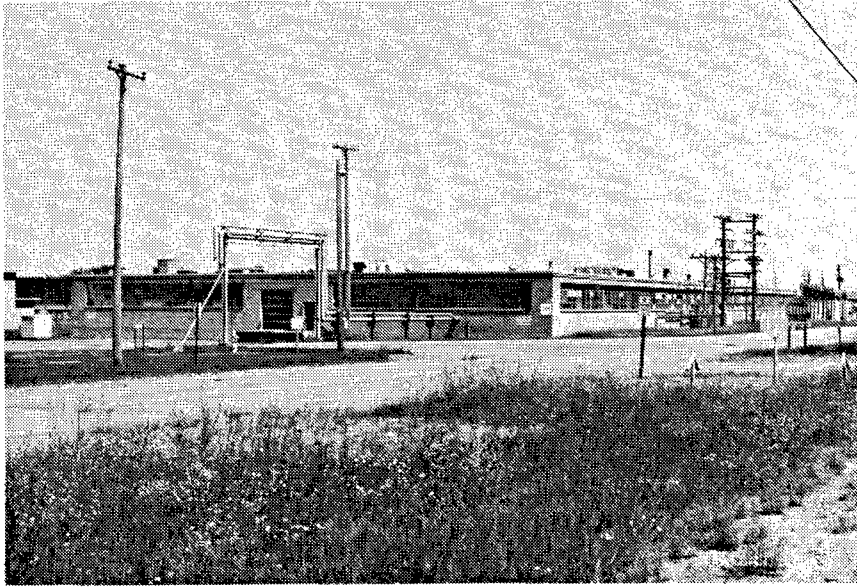


Figure 125. Building 112: Machine Tool Shop.



Figure 126. Building 112: Interior view of the Machine Tool Shop.

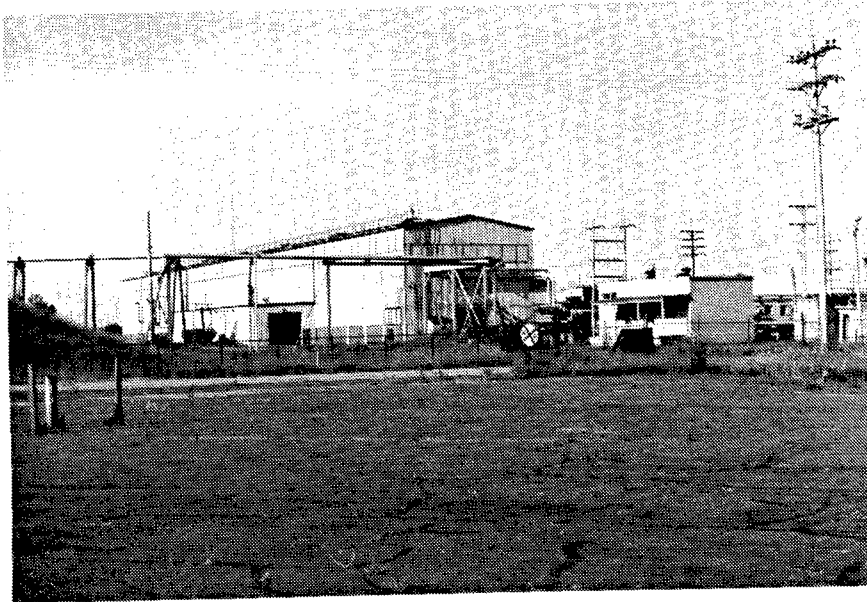


Figure 127. Building 502: Forge Shop wing of this building.

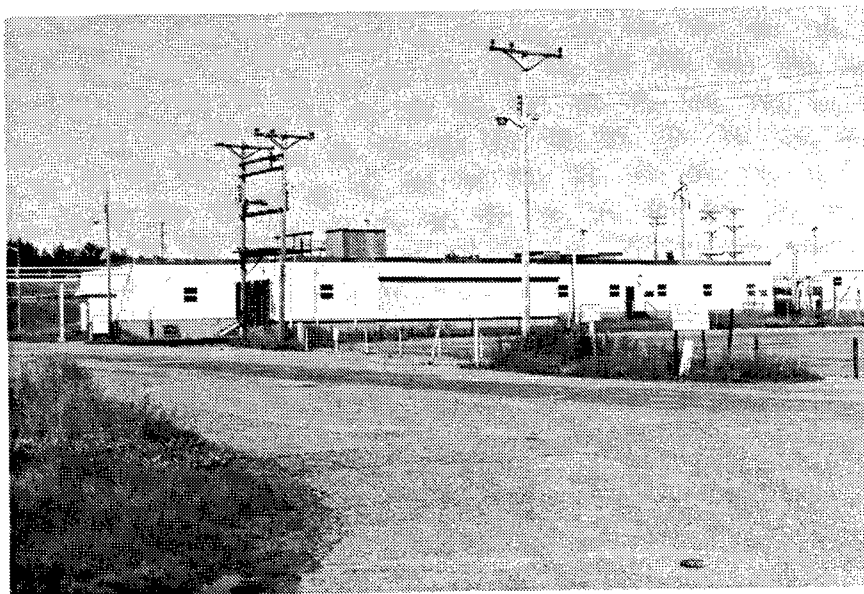


Figure 128. Building 511: F.E. Maintenance Shop.



Figure 129. Building 557: Maintenance Shop.



Figure 130. Building 557: Interior view of the Maintenance Shop.

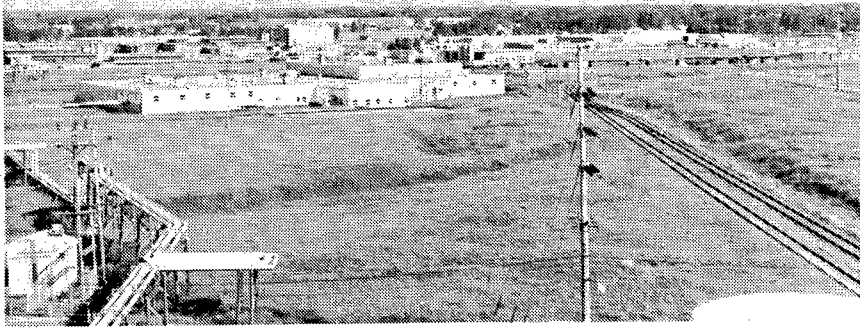


Figure 131. Overview of Buildings 594 and 115 (the Machine Maintenance Shop and the Heat Plant Building, respectively).

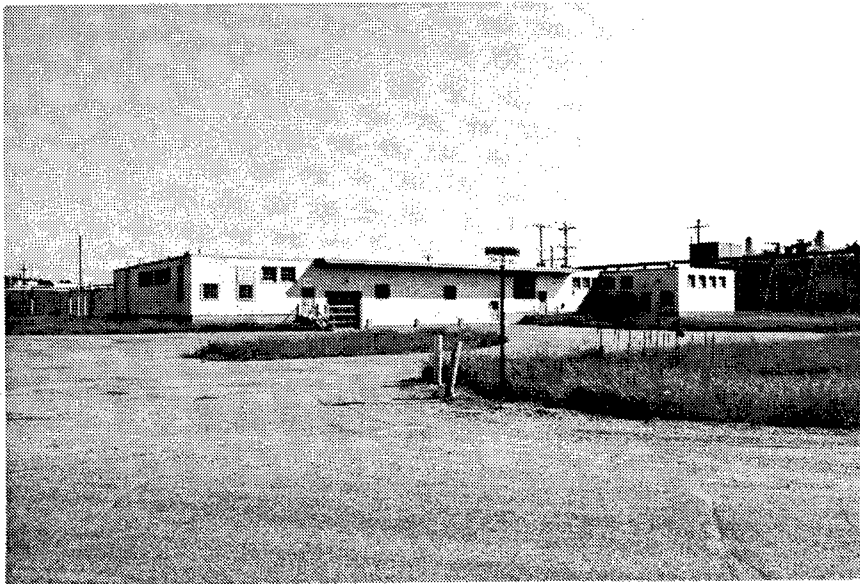


Figure 132. Building 587: Sheet Metal Shop.



Figure 133. Building 594: Machine Maintenance Shop.

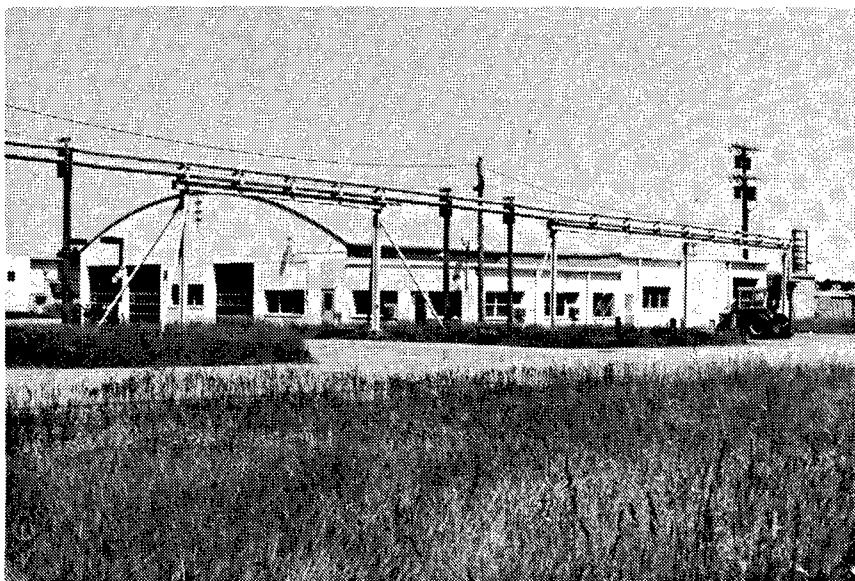


Figure 134. Building 114: South face of a Vehicle Maintenance Garage.

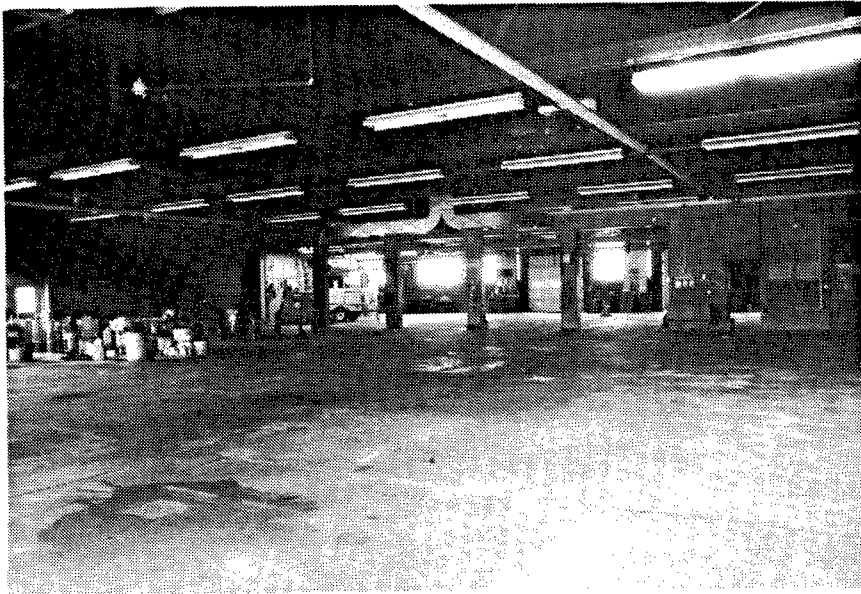


Figure 135. Building 114: Interior view of the Railroad and Vehicle Garage.

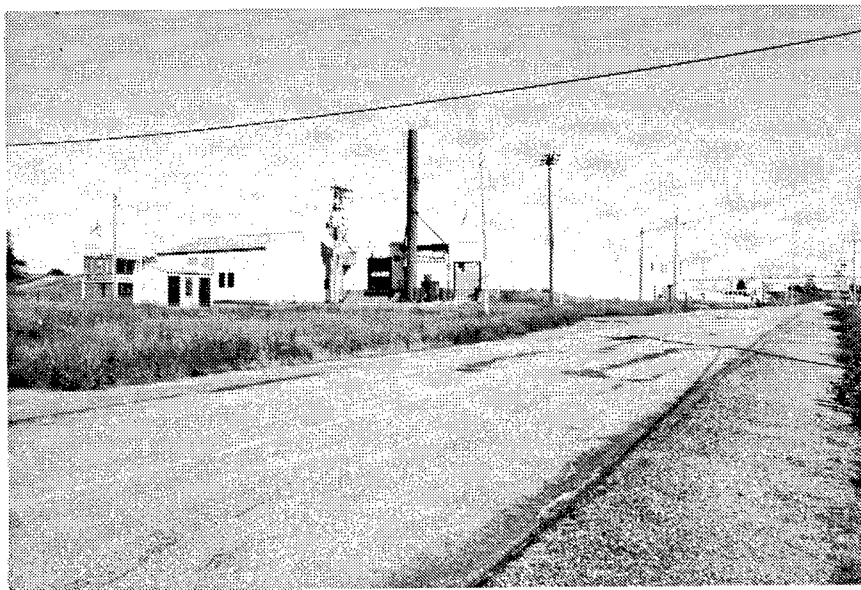


Figure 136. Building 590: C.B.R. Production Building.

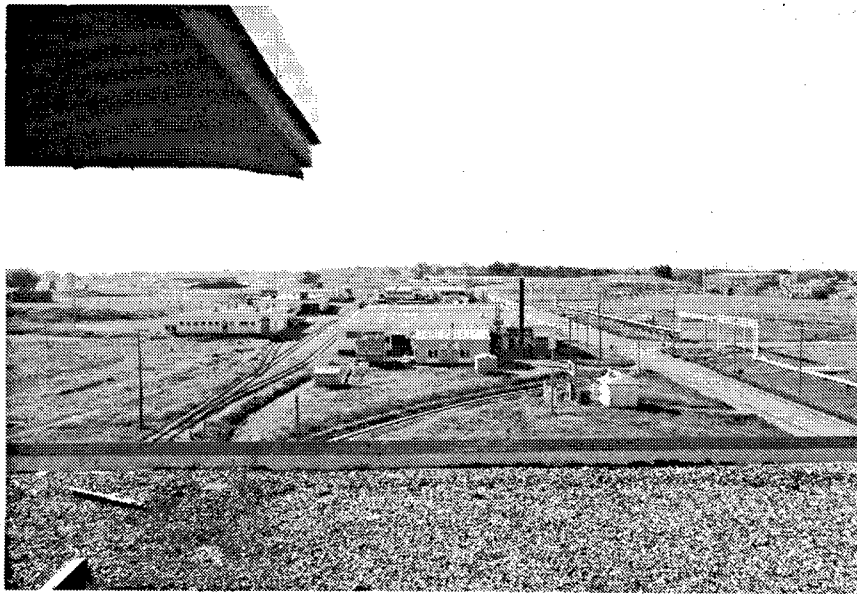


Figure 137. Overview of Buildings 590 and 513 (the C.B.R. Production Building and the Salvage and Surplus Property Building, respectively).

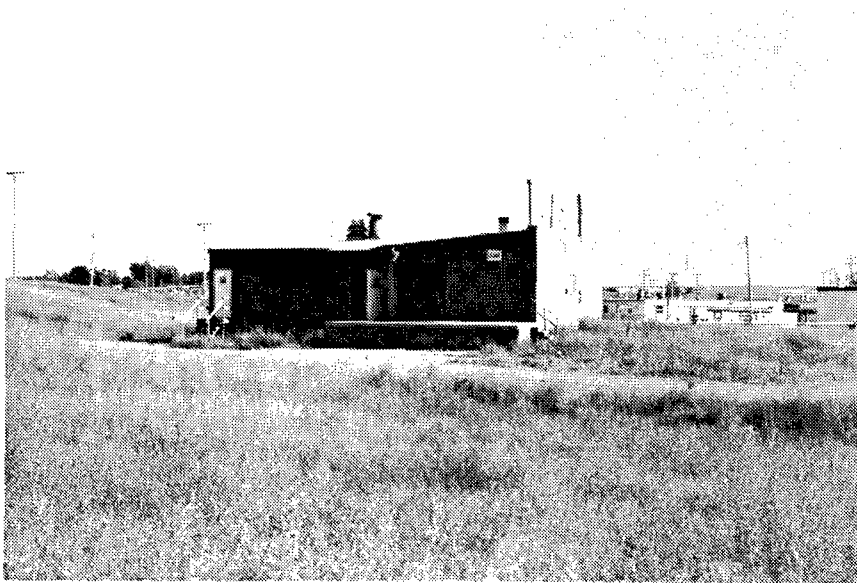


Figure 138. Building 599: Steam Cleaning and Salvage Building.

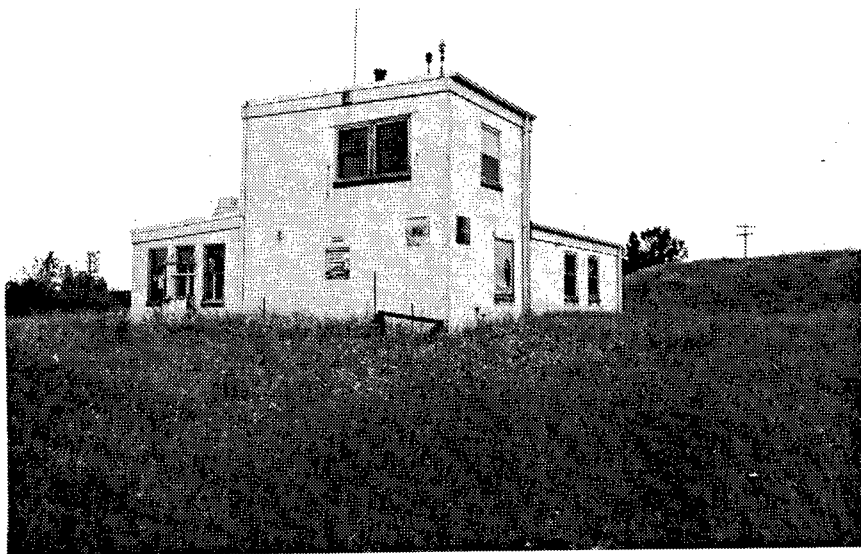


Figure 139. Building 545: Proofhouse.

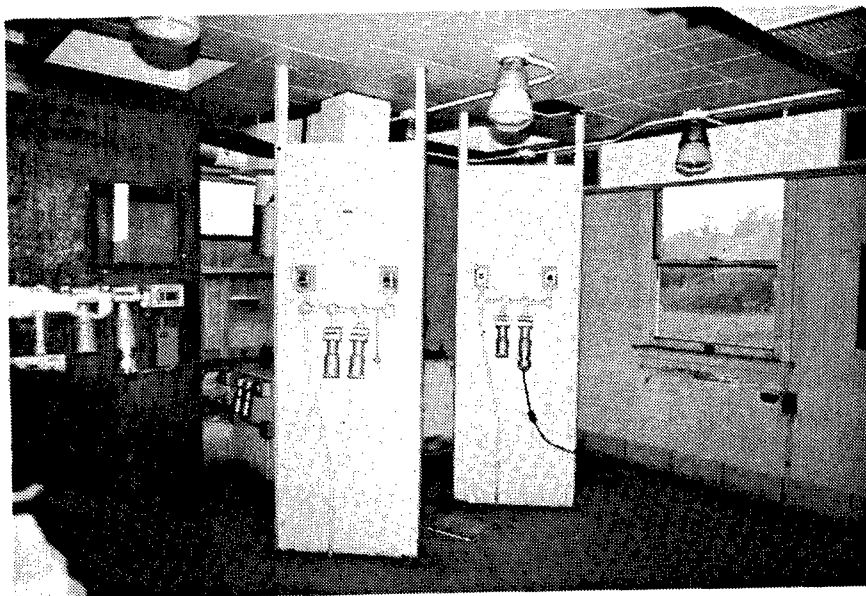


Figure 140. Building 545: Interior view of the Proofhouse.



Figure 141. Building 545: Another interior view of the Proofhouse.

SHIPPING AND STORAGE FACILITIES



Figure 142. Building 139-D: Igniter Composition Storage Building.

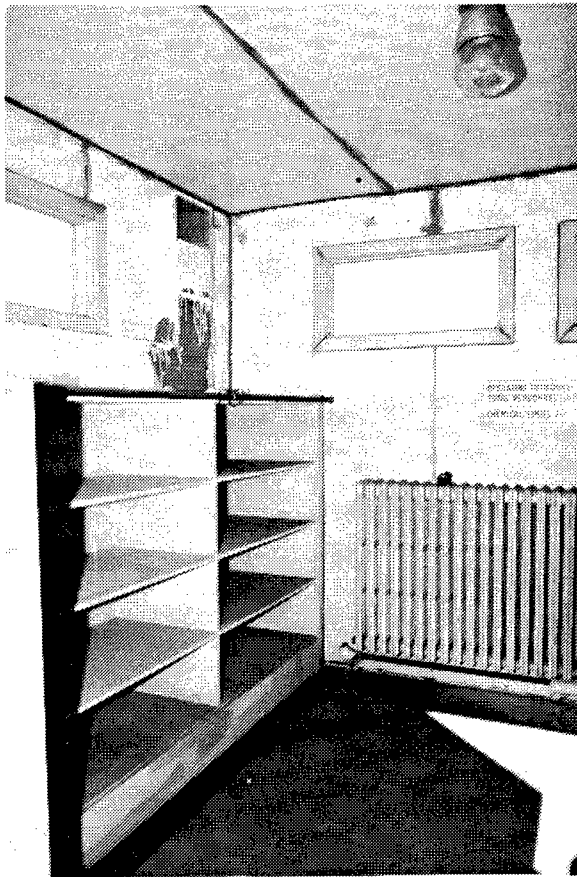


Figure 143. Building 139-C: Interior view of this Igniter Composition Storage Building.

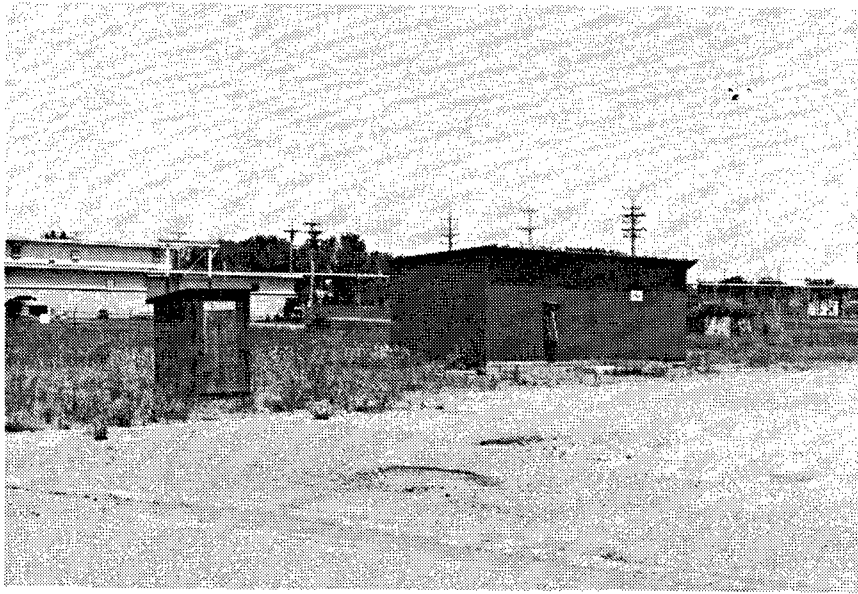


Figure 144. Building 152: Storage Building that has been utilized for tire storage in recent times.

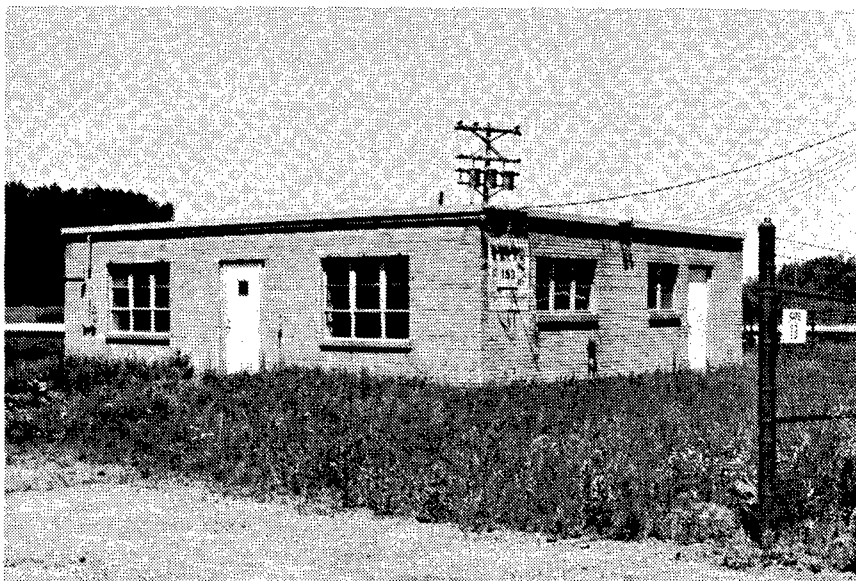


Figure 145. Building 153: General Storehouse that has been recently utilized for the storage of fire extinguishers.

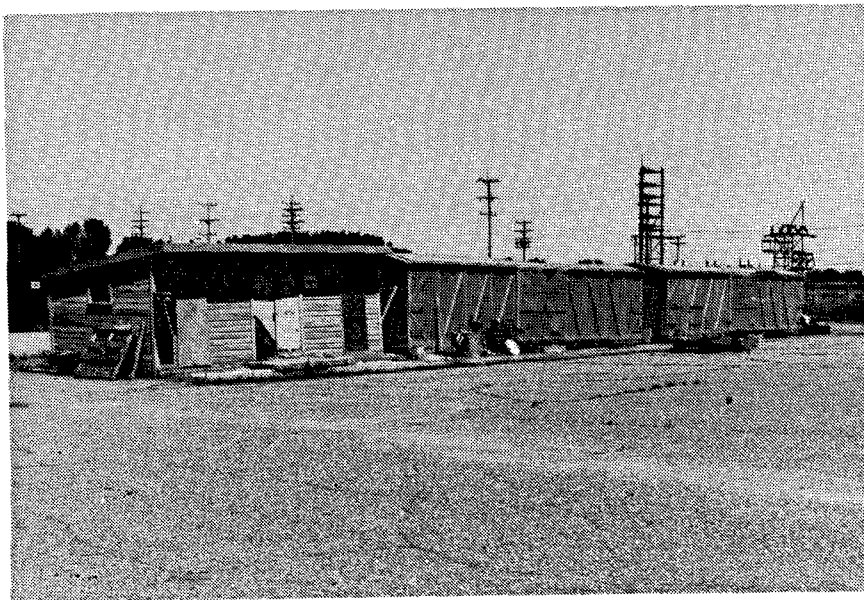


Figure 146. Building 167: Storage Building.

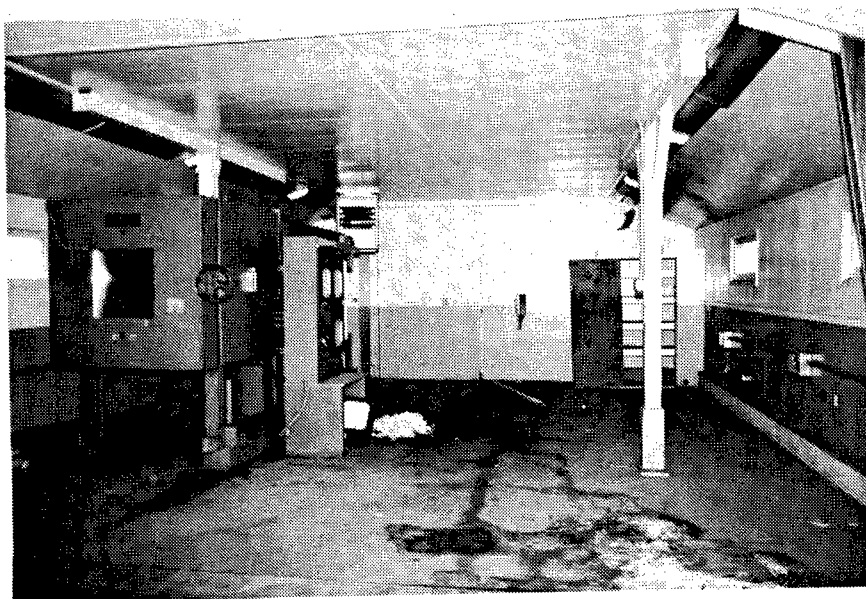


Figure 147. Building 174: Interior view of a Storage House.



Figure 148. Building 195: Flammable Materials Storage House.

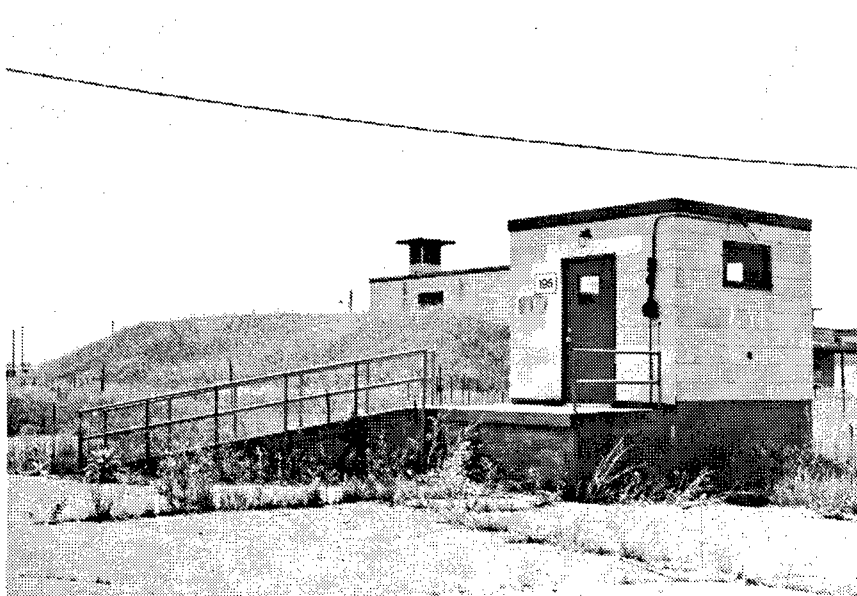


Figure 149. Building 195: Flammable Materials Store House.

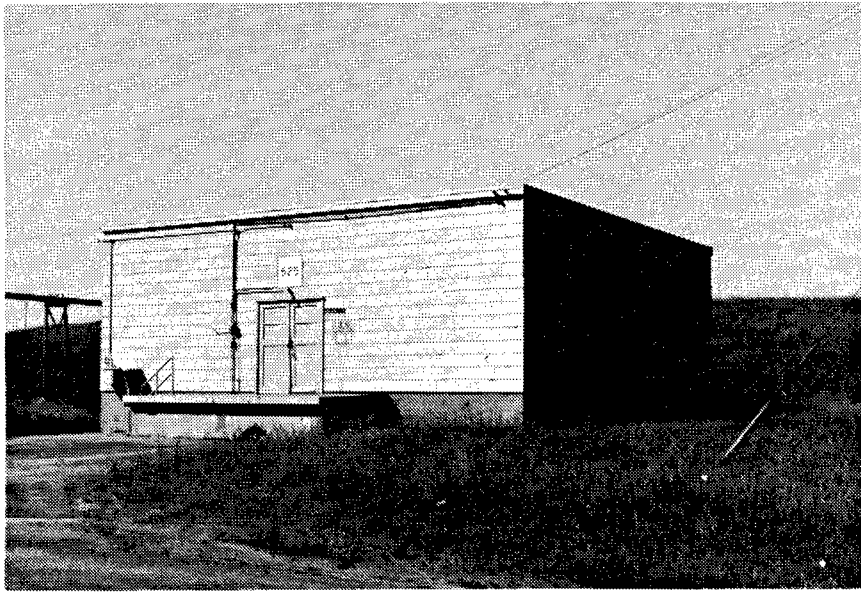


Figure 150. Building 525: Flammable Materials Storage House.

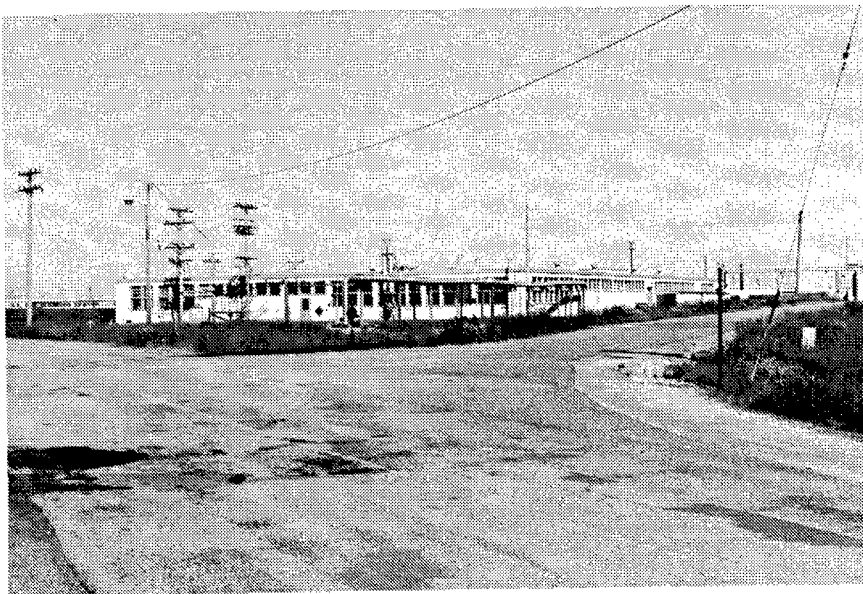


Figure 151. Building 588: Reclamation and Salvage Building.

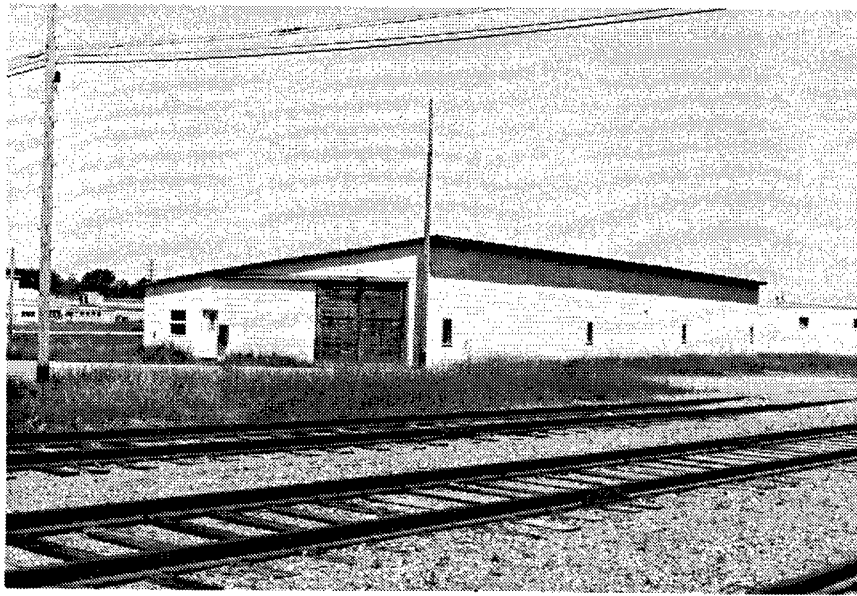


Figure 152. Building 717: Lumber Storage Building.

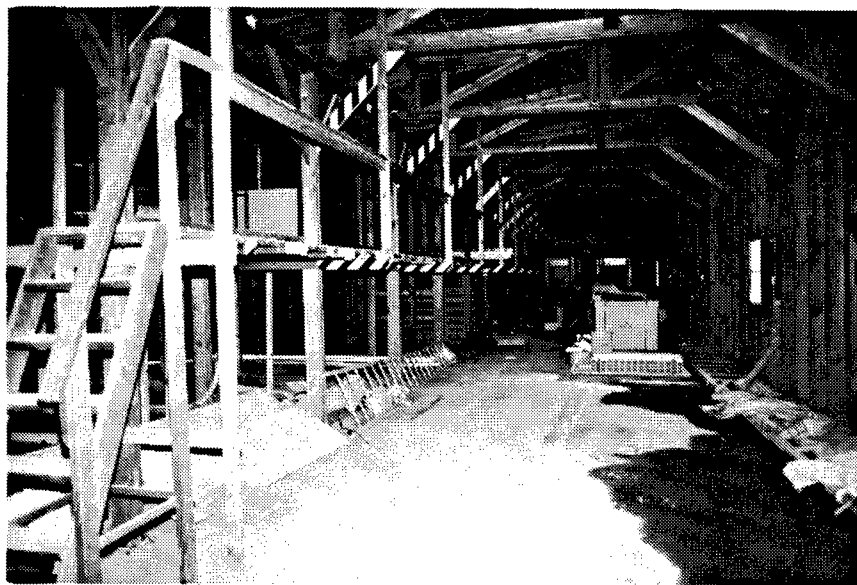


Figure 153. Building 717: Interior view of the Lumber Storage Building.

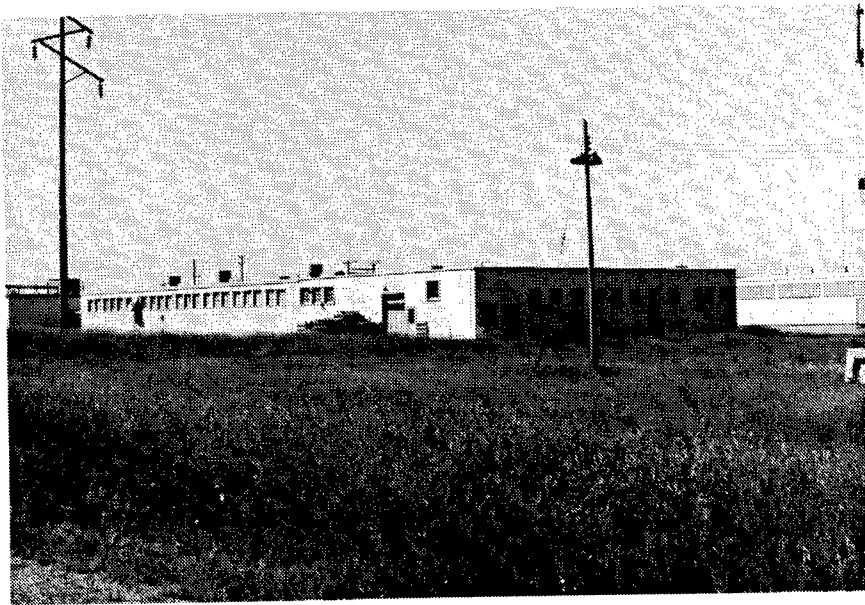


Figure 154. Building 513: Salvage and Surplus Property Building.

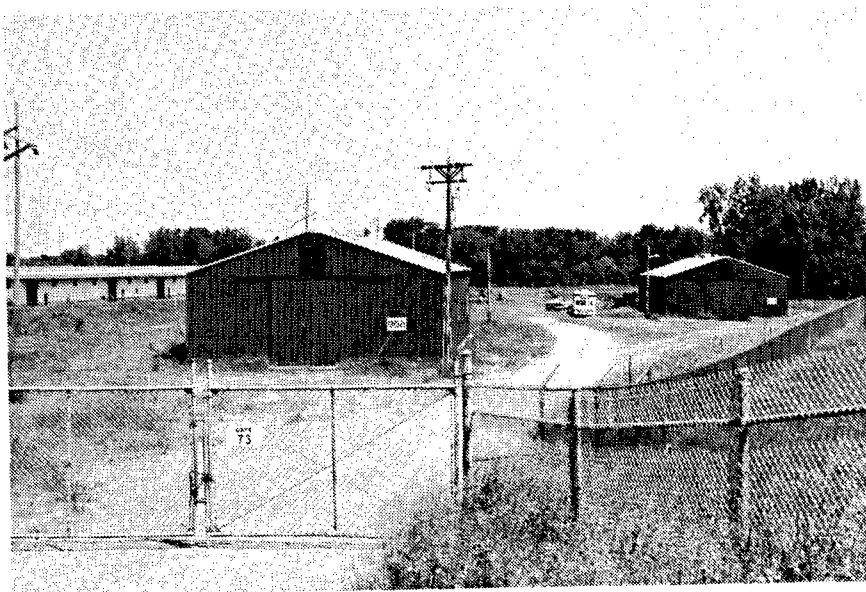


Figure 155. Buildings 908 and 909: Storage and Salvage areas.

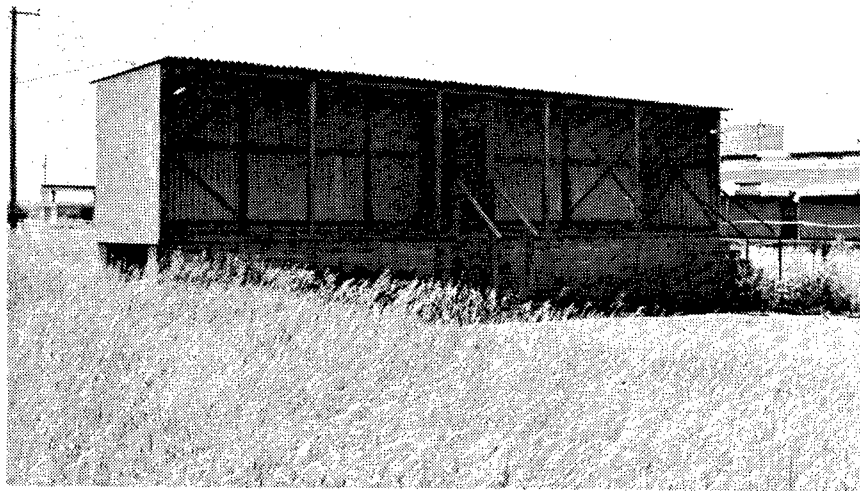


Figure 156. Building 975: Oxygen Storage House.

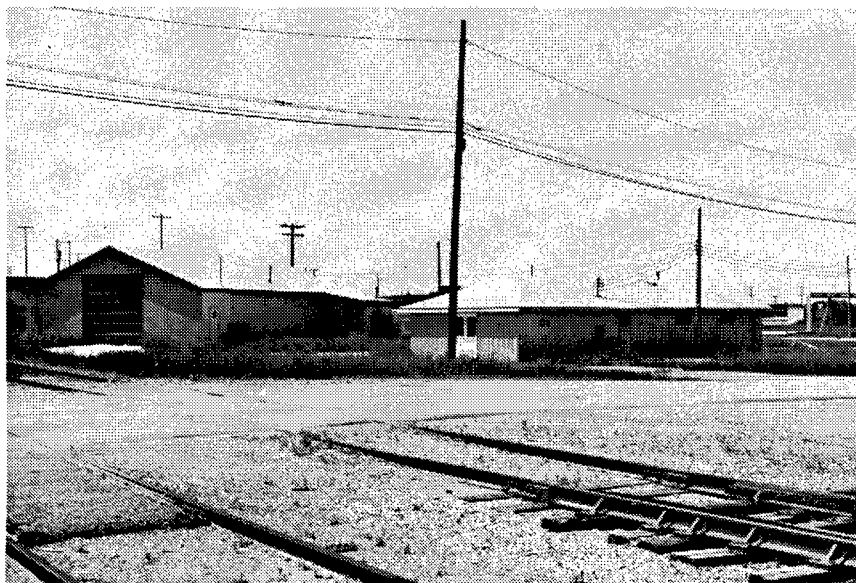


Figure 157. Buildings 174 and 176: The Storage Warehouse (right) and a Storehouse for roads and grounds equipment (left).

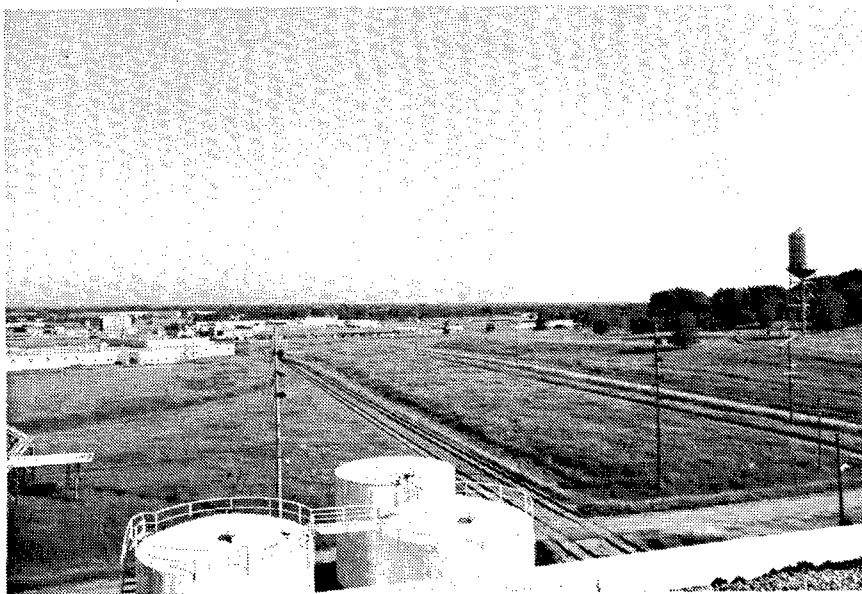


Figure 158. Overview of Building 190 and water tower.

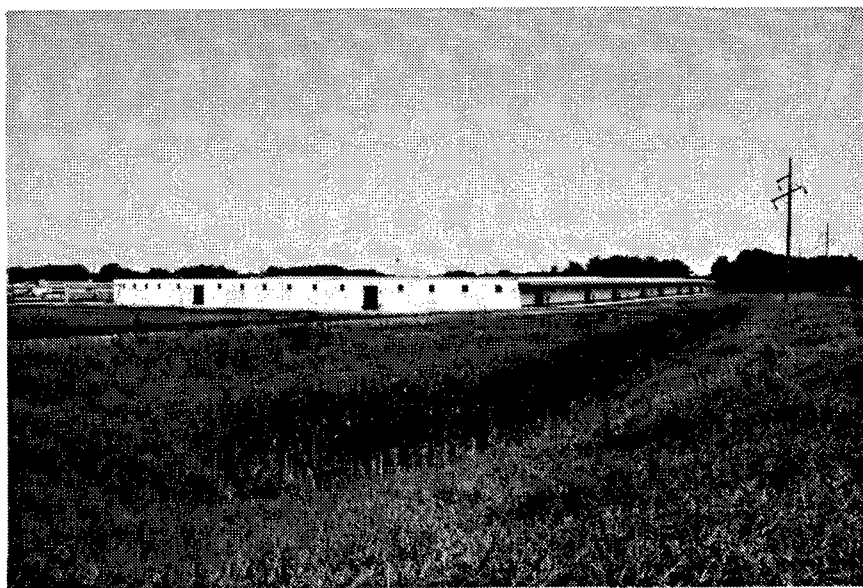


Figure 159. Building 190: South and west faces of the General Storage Warehouse.



Figure 160. Building 190: South and west faces of the General Storage Warehouse, looking northeast.



Figure 161. Overview of rail access to the Powder Magazines on Upper Magazine Road.

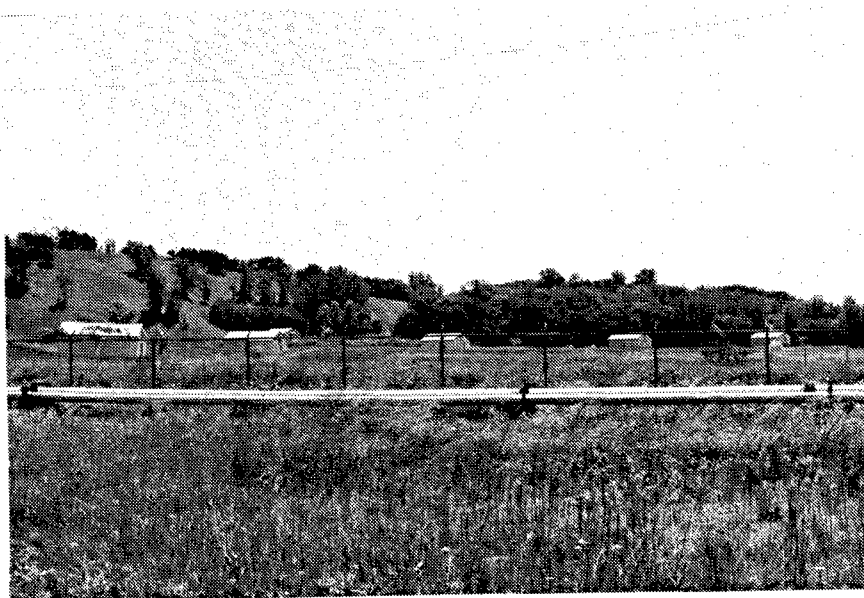


Figure 162. Overview of the Group 119 Powder Magazines.

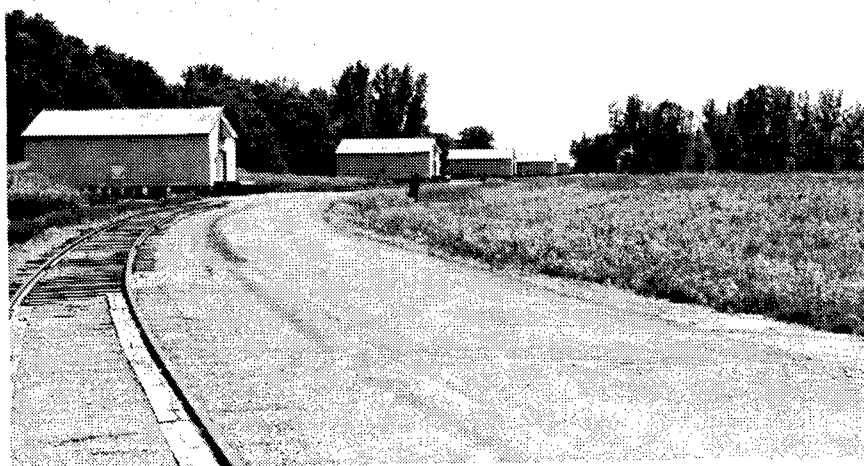


Figure 163. Another overview of the Group 119 Powder Magazines.

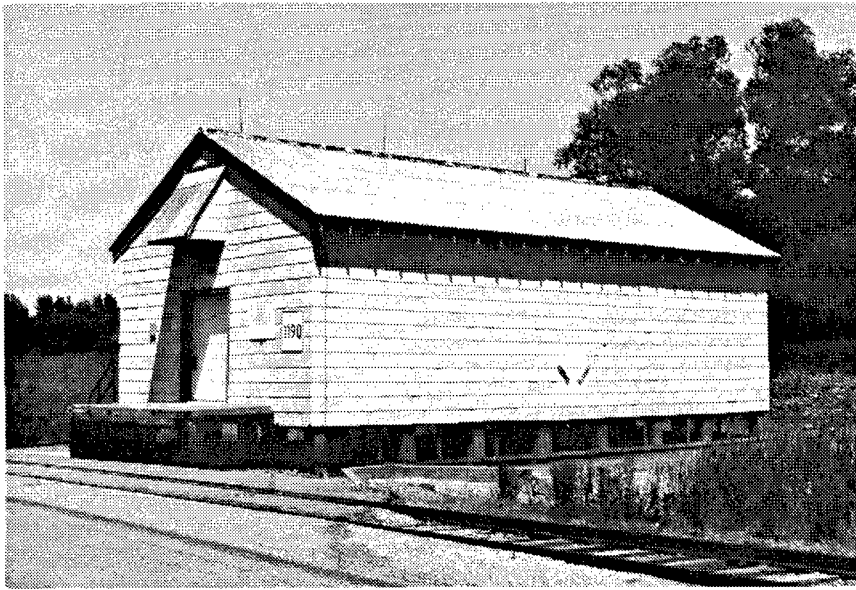


Figure 164. Building 119-Q: Propellant Storage Magazine.

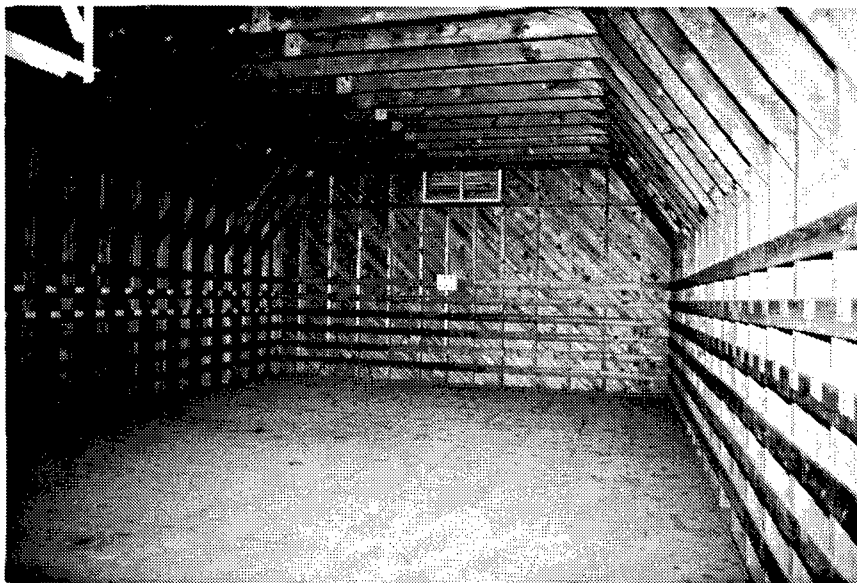


Figure 165. Building 119-H: Interior view of a Small Arms Pyro Magazine and Propellant Storage building.

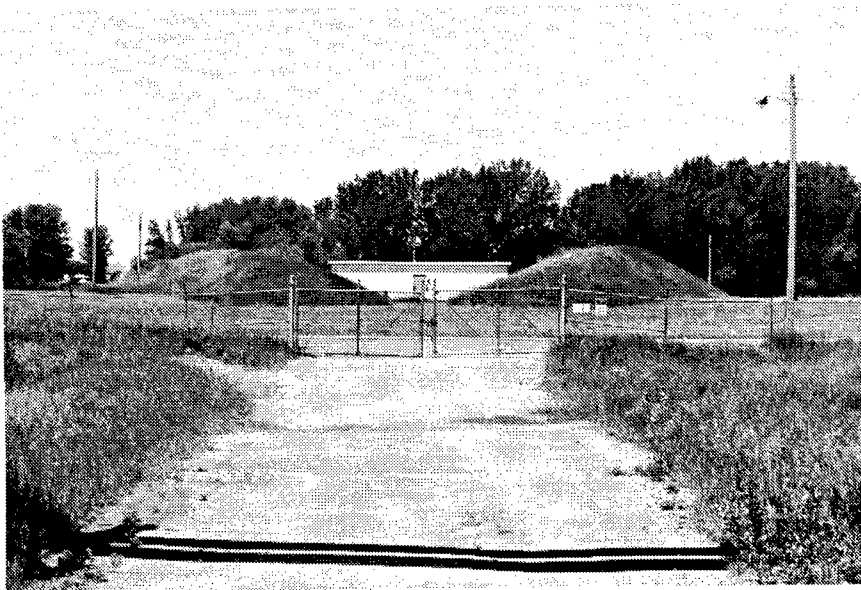


Figure 166. Building 120: High Explosive Magazine.

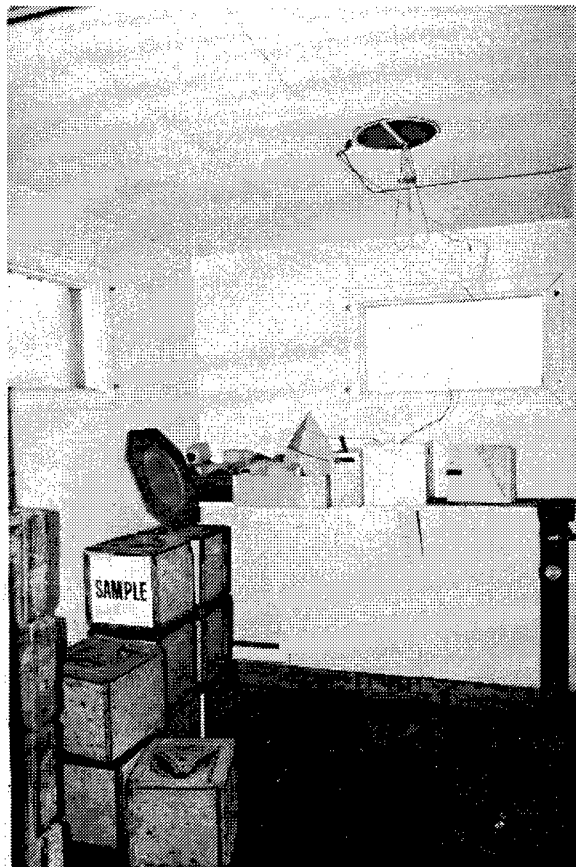


Figure 167. Building 121-A: Interior view of a High Explosive Magazine and Propellant Powder Sampling building.

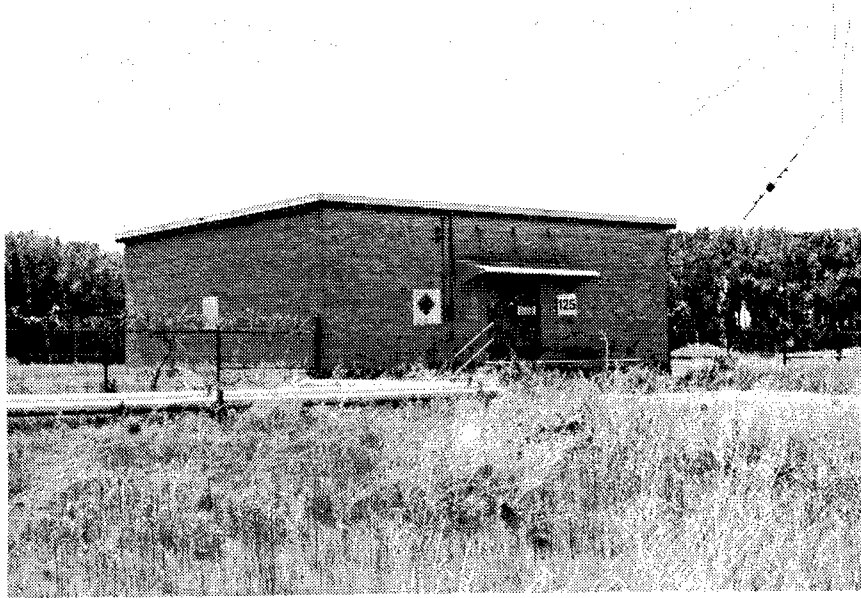


Figure 168. Building 125: Small Arms Pyro Magazine.

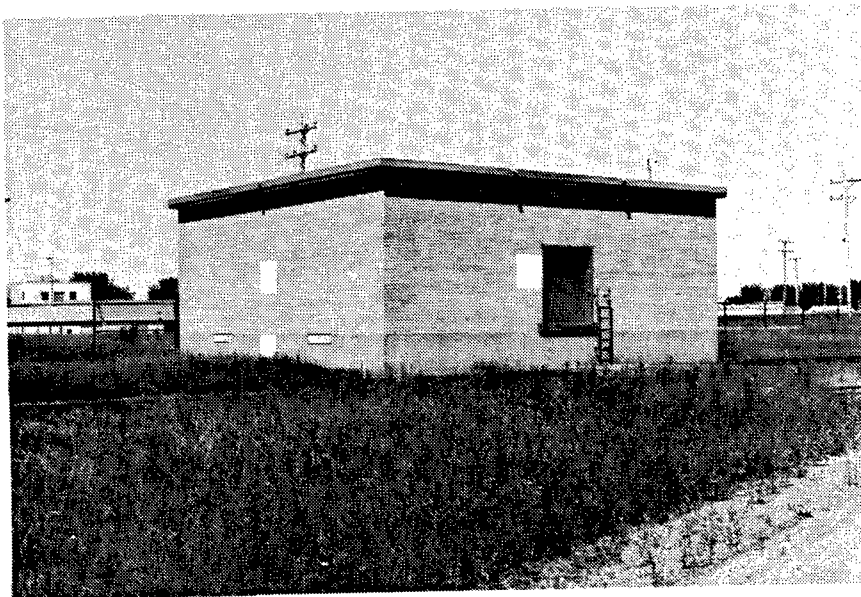


Figure 169. Building 125: Rail loading door on this Small Arms Pyro Magazine.



Figure 170. Buildings 126 (left) and 127 (right): Small Arms Pyro Magazines.

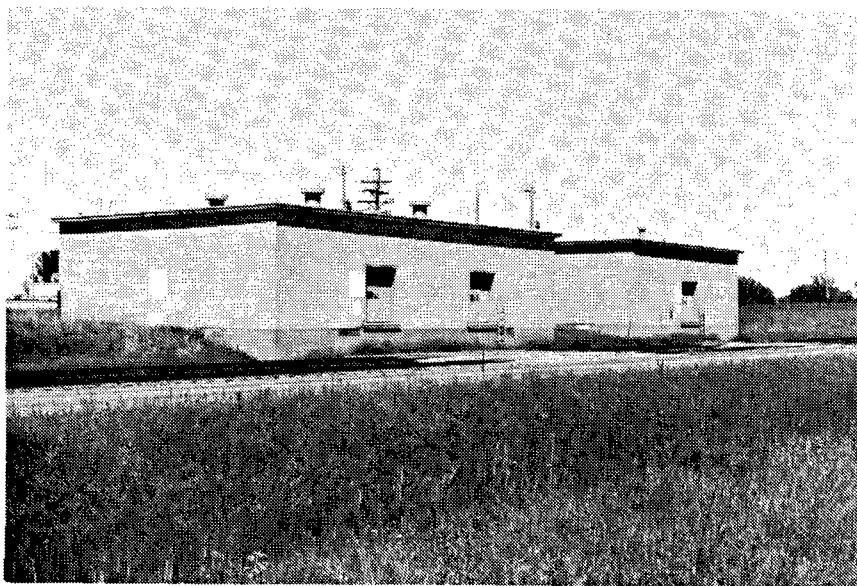


Figure 171. Buildings 126 (right) and 127 (left): Facades on the rail loading doors of these Small Arms Pyro Magazines.

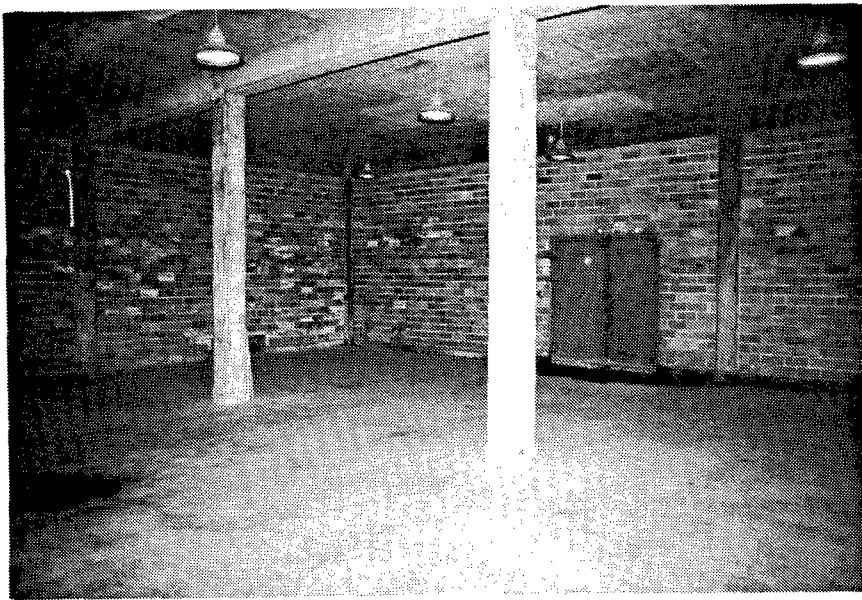


Figure 172. Building 126: Interior view of a Small Arms Pyro Magazine.

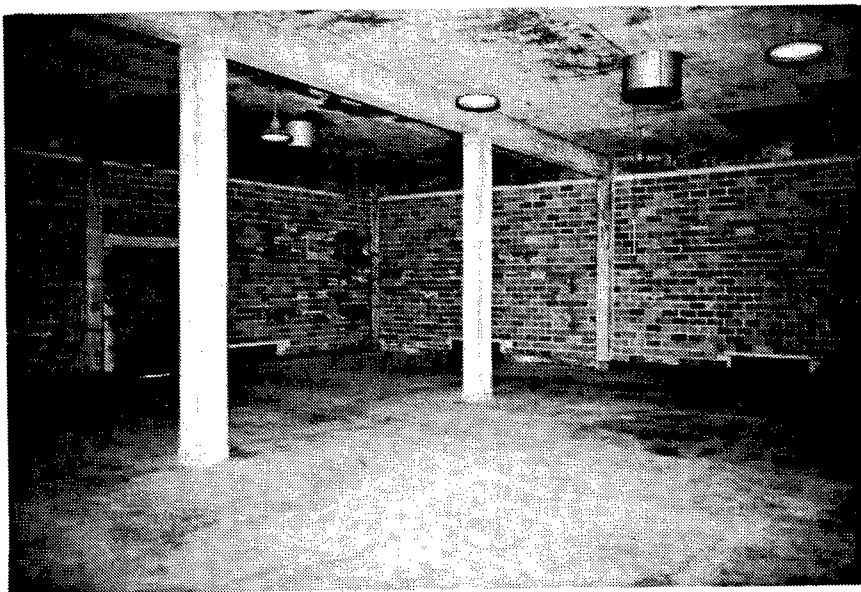


Figure 173. Building 127: Interior view of a Small Arms Pyro Magazine.

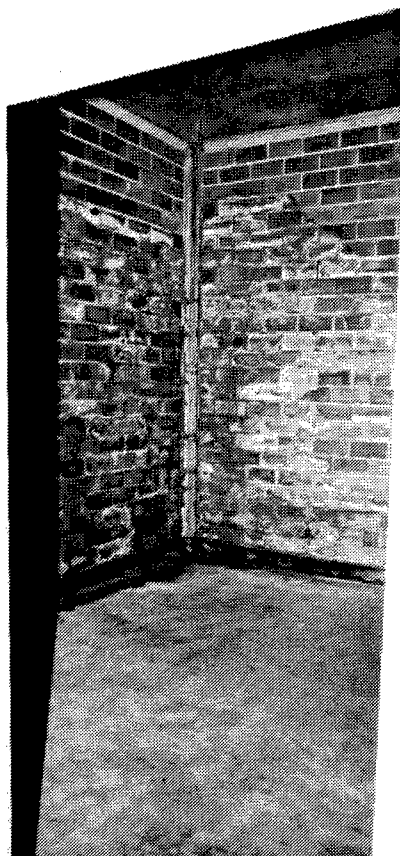


Figure 174. Building 127: Second interior view of a Small Arms Pyro Magazine.

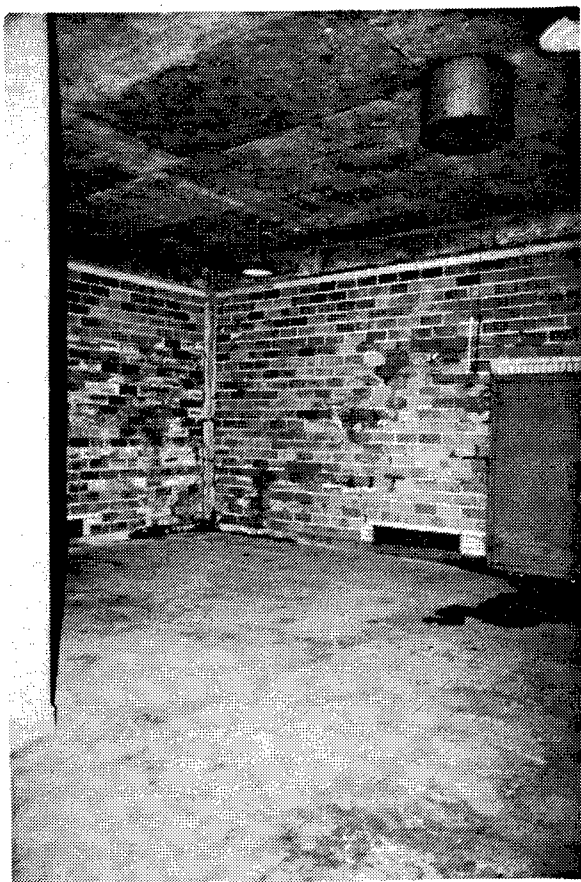


Figure 175. Building 127: Third interior view of a Small Arms Pyro Magazine.

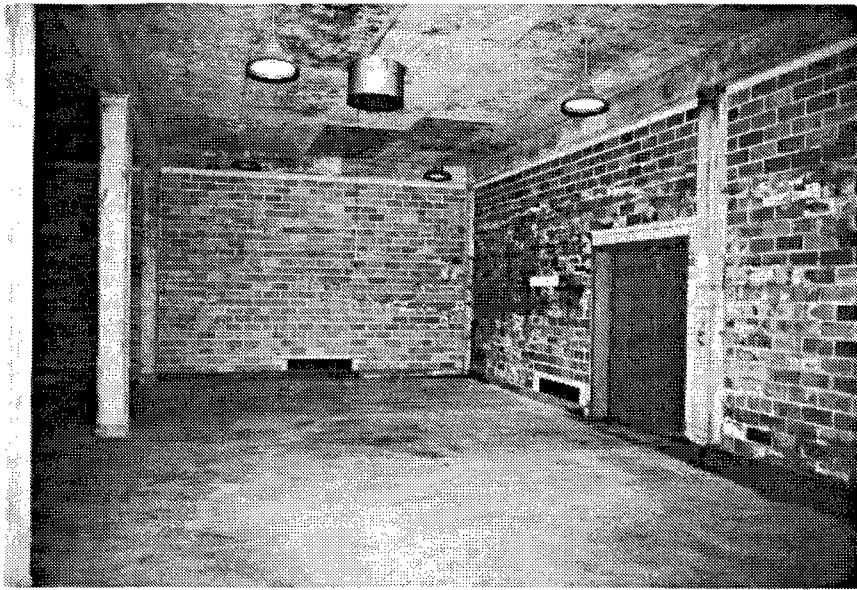


Figure 176. Building 127: Fourth interior view of a Small Arms Pyro Magazine.

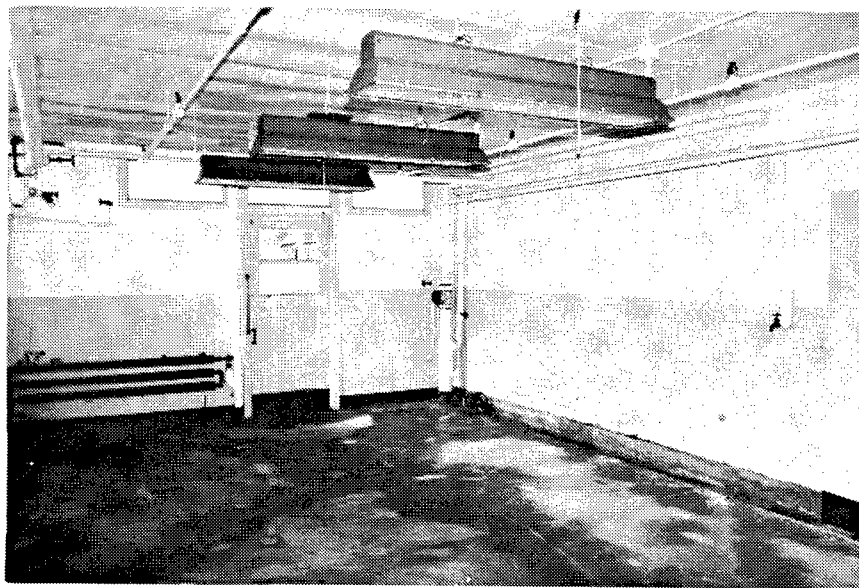


Figure 177. Building 132-A: Interior view of a Small Arms Pyro Magazine.



Figure 178. Building 128: Chemical Storage Magazine.



Figure 179. Buildings 129-A (right) and 132-A (left): Chemical Storage Magazine and Small Arms Pyro Magazine, respectively.



Figure 180. Buildings 132-B, 129-B, and 144-A: Small Arms Pyro Magazine, Chemical Storage Magazine, and Black Powder Magazine (left to right).

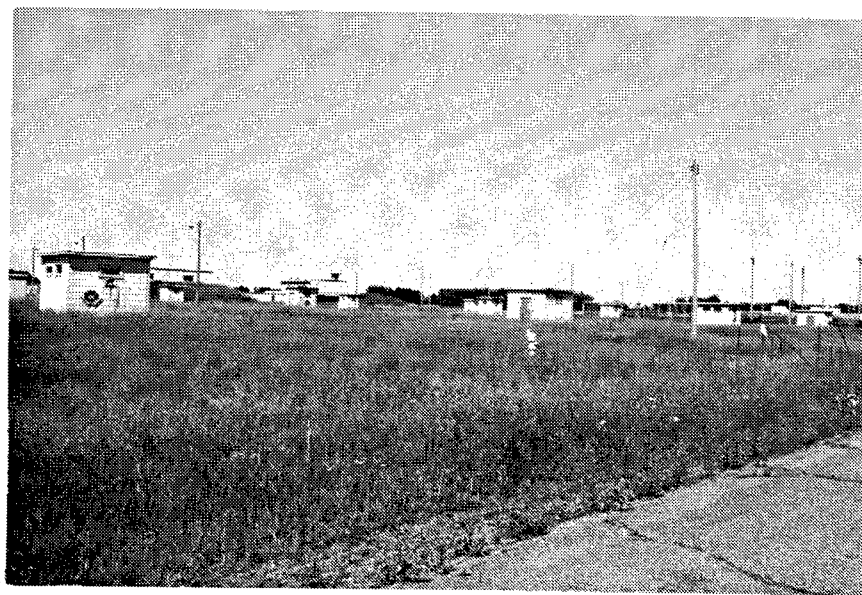


Figure 181. Overview of the Magazines in Groups 139 and 144.

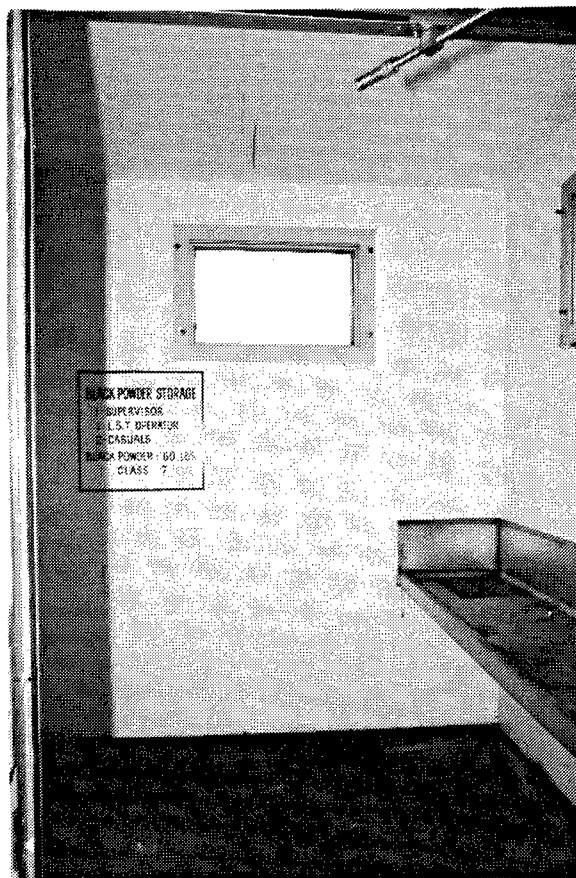


Figure 182. Building 144-A: Interior view of a Black Powder Storage Magazine.

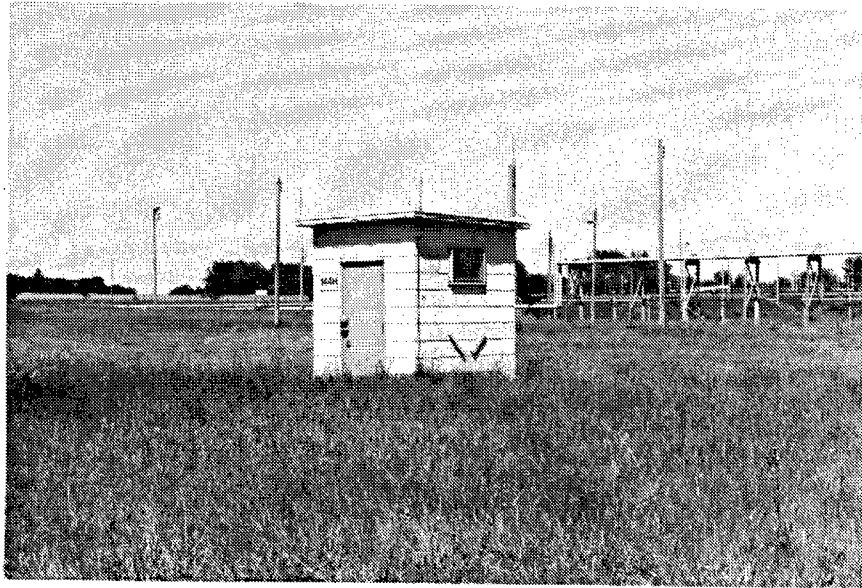


Figure 183. Building 144-H: Igniter Pre-mix Storage Magazine.



Figure 184. Building 144-F: Interior view of an Igniter Pre-mix Storage Magazine.

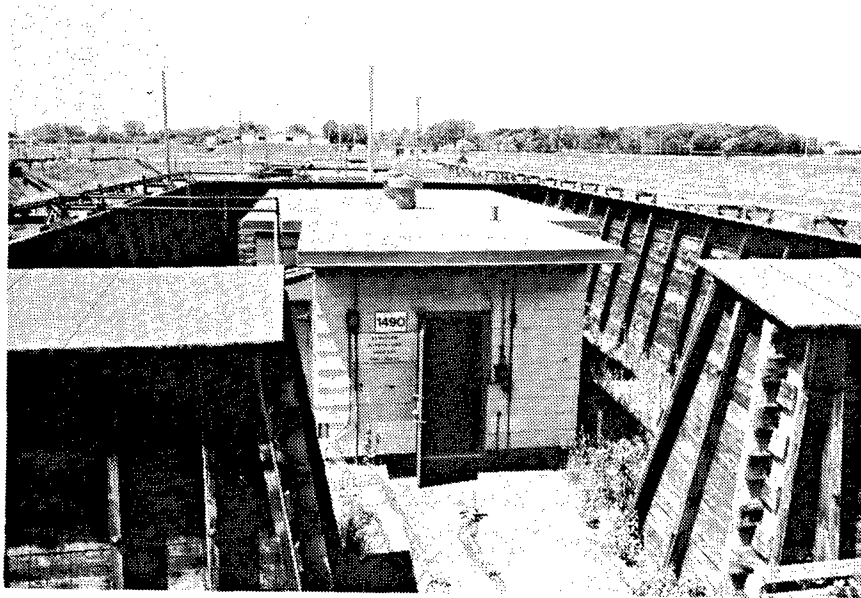


Figure 185. Building 149-O: Magazine.



Figure 186. Building 149-O: Interior view of storage area in the Magazine.



Figure 187. Building 149-O: Interior view of the foyer to the storage area of the Magazine.



Figure 188. Railroad cars stored at Twin Cities.

UTILITIES AND INFRASTRUCTURE



Figure 189. Building 105: Guard House located at Gate P4.



Figure 190. Building 106-A: Guard House at Gate 4.



Figure 191. Overview of Buildings 515, 503, and 590 (Steam Generation Plant, a Small Caliber Loading Plant, and a CBR Production Building, respectively).

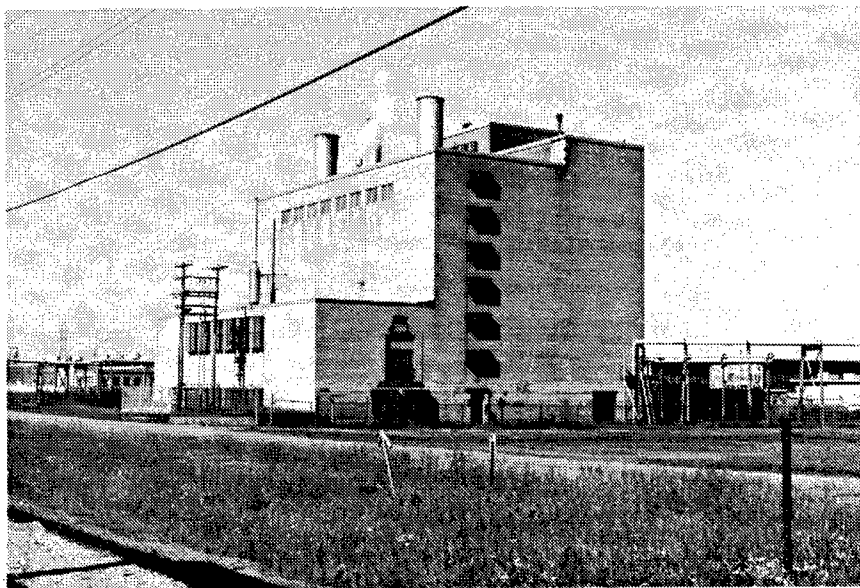


Figure 192. Building 115: Steam Generation Plant.

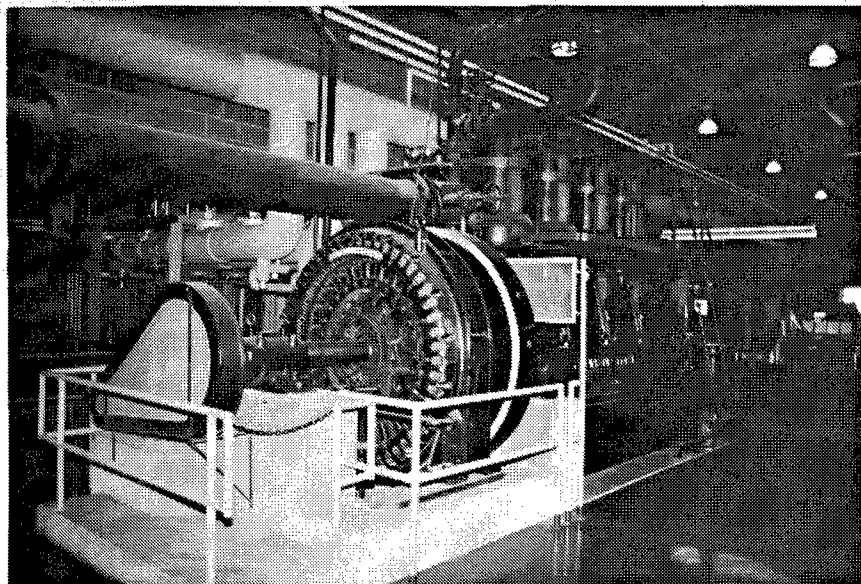


Figure 193. Building 115: Interior view of the Steam Generation Plant showing a Diesel Generator manufactured by Fairbanks-Morse and received in 1941.

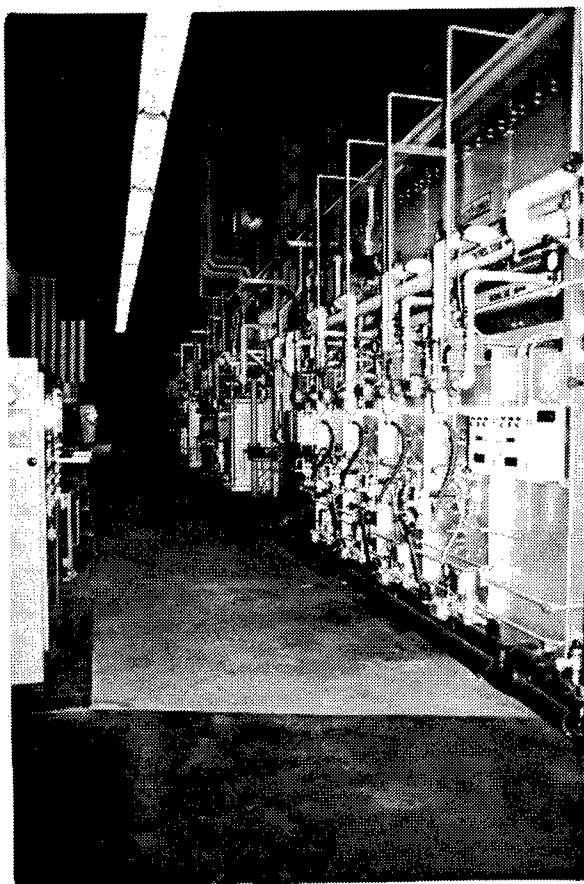


Figure 194. Building 115: A Boiler in the Steam Generation Plant manufactured by Erie City Iron Works.

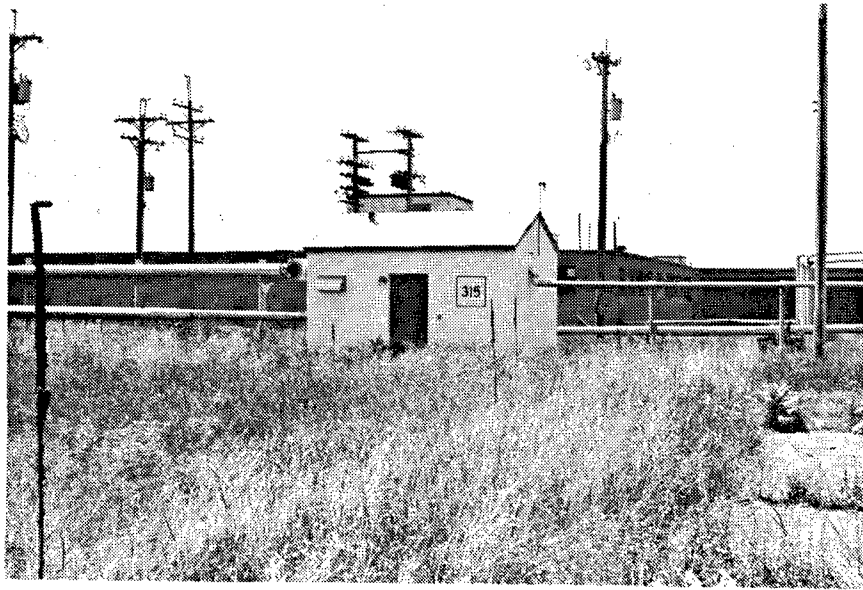


Figure 195. Building 315: Steam House.

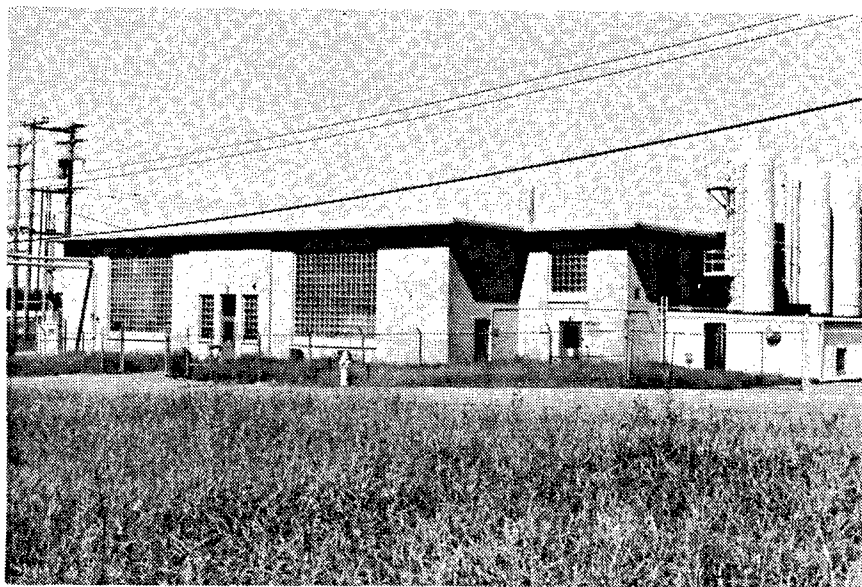


Figure 196. Building 116: Water Treatment Plant.

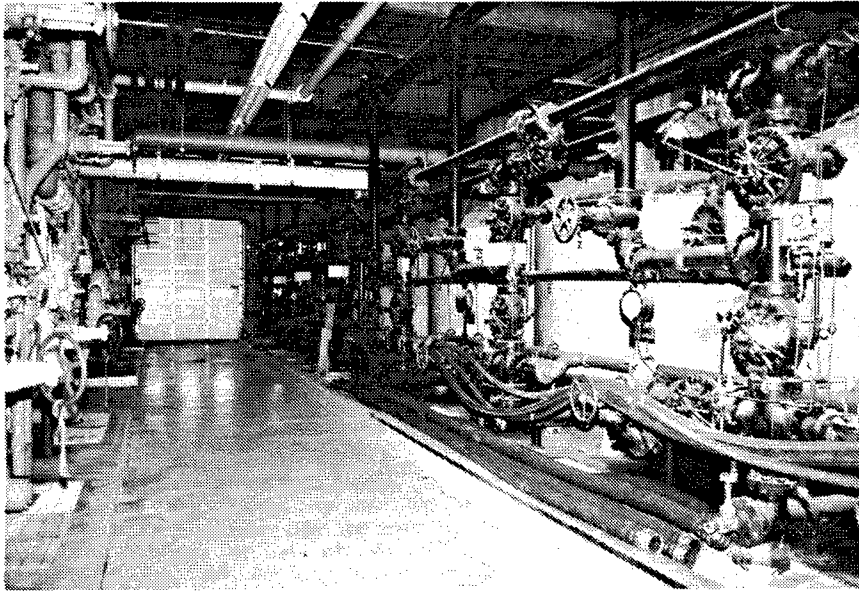


Figure 197. Building 116: A Water Softener in the Water Treatment Plant manufactured by the Refinite Corporation of Omaha, Nebraska.

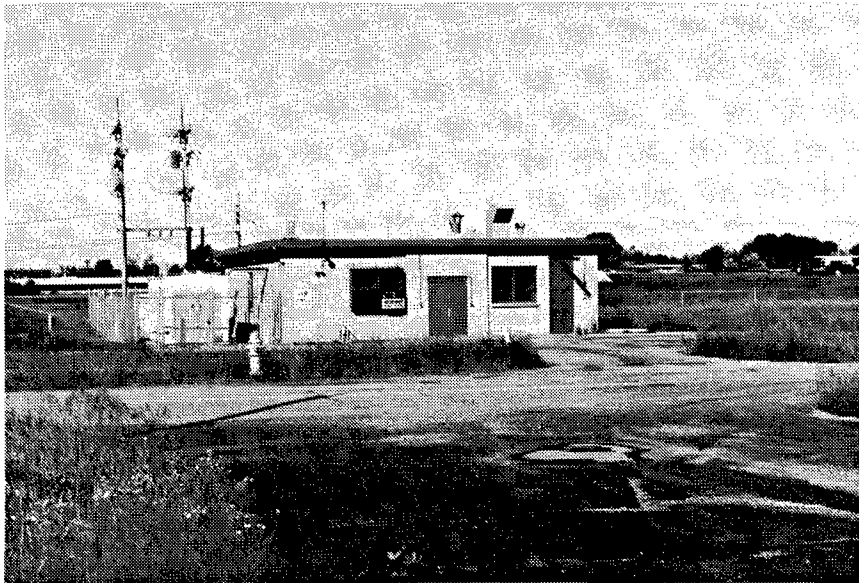


Figure 198. Building 118: Main Sewage Pumping Station.

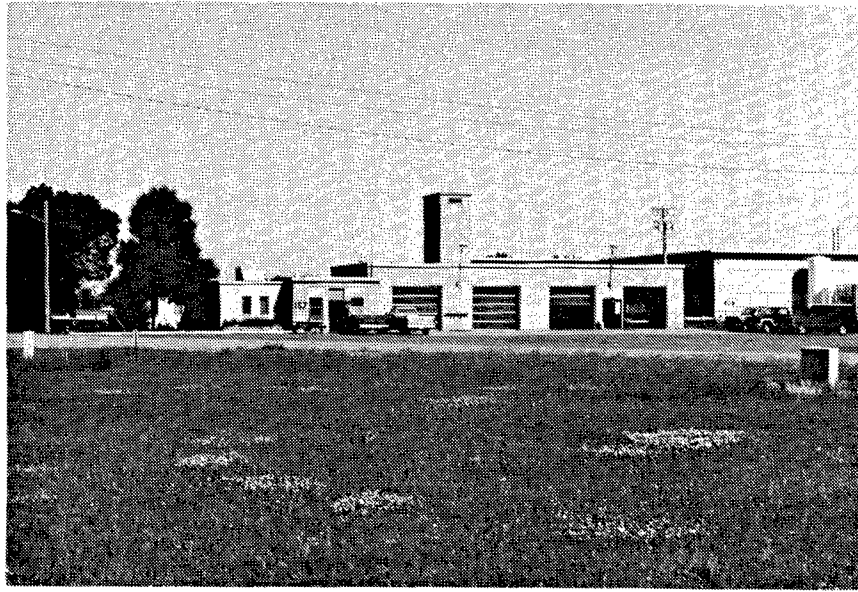


Figure 199. Building 157: Fire Station.

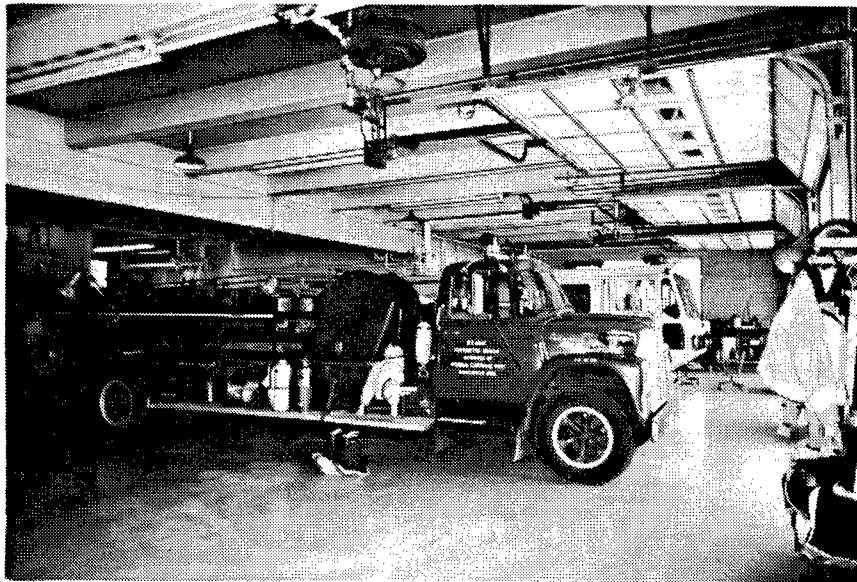


Figure 200. Building 157: Interior view of the Fire Station.

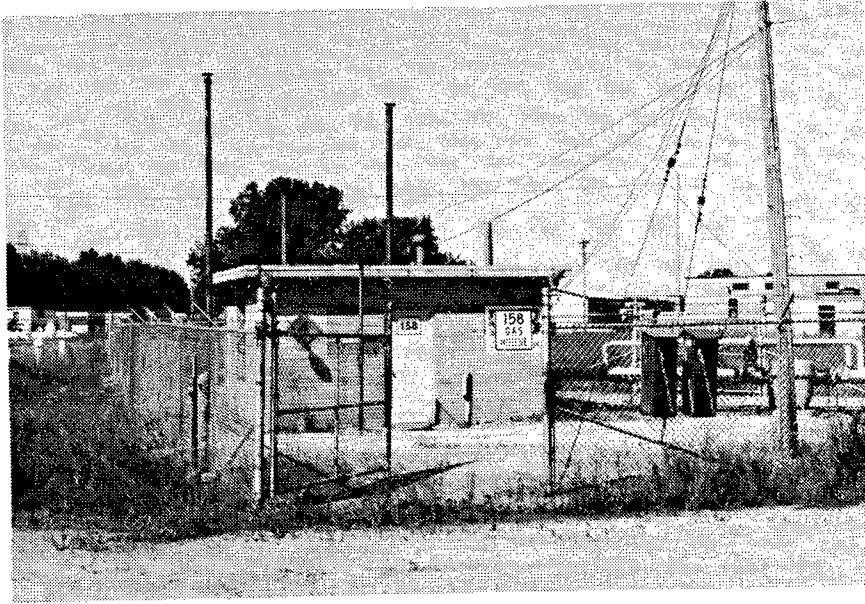


Figure 201. Building 158: Gas Meter House.



Figure 202. Building 517-A: Well House Number 6. This building was demolished September 30, 1993.

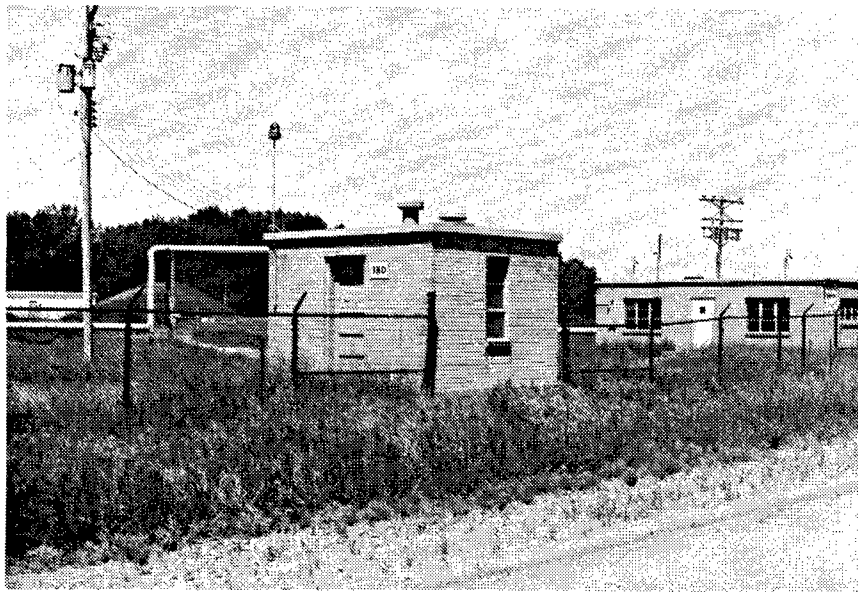


Figure 203. Building 180: "Sewer Life Station".

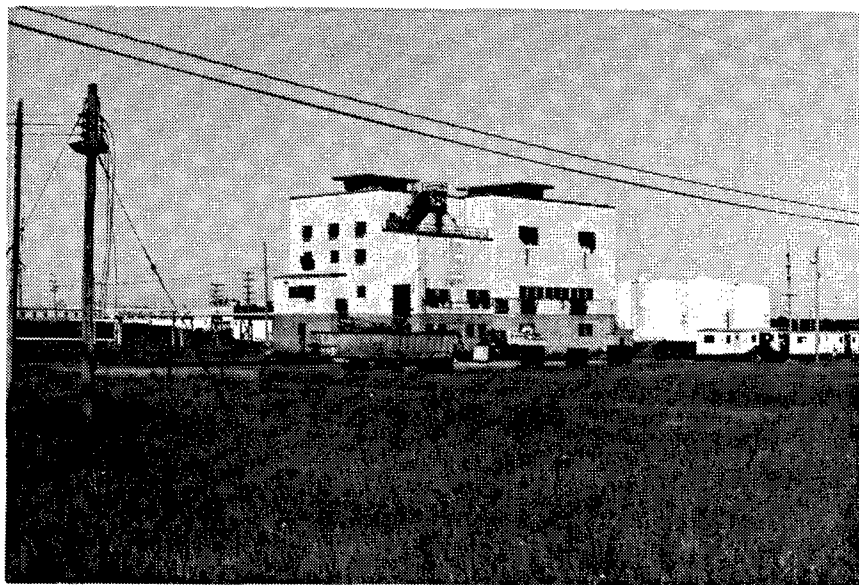


Figure 204. Building 515: Steam Generation Plant.

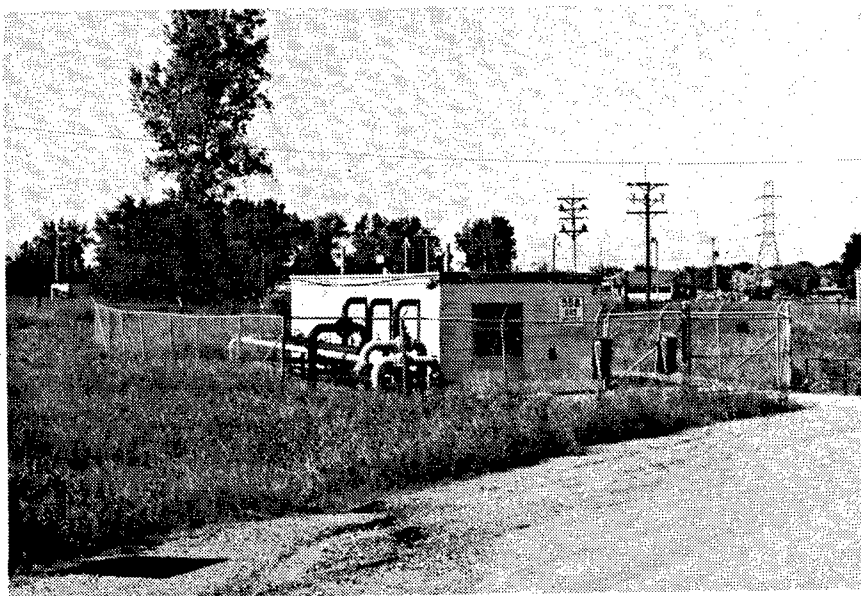


Figure 205. Building 558: Gas Meter House.

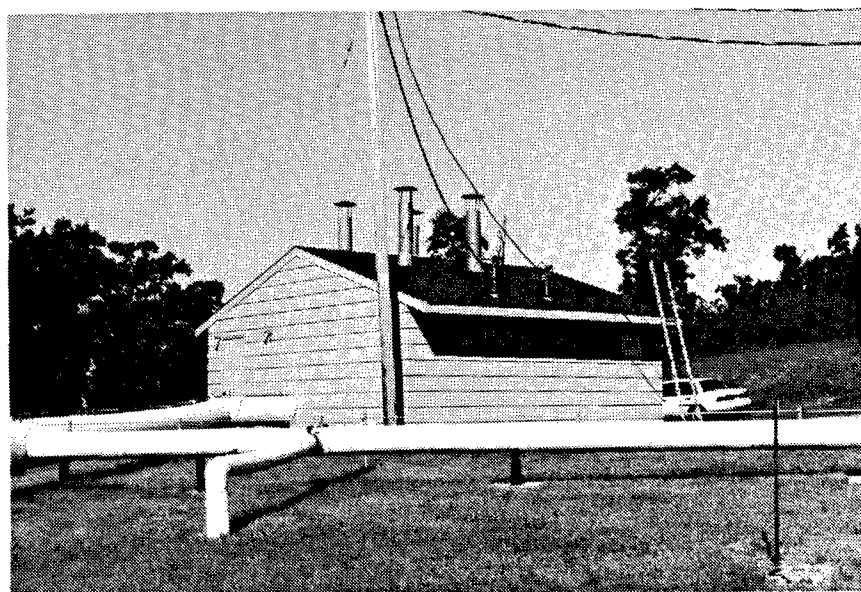


Figure 206. Building 570: Blower House/Environmental Treatment Site.



Figure 207. Building 571: Blower House/Environmental Treatment Site.

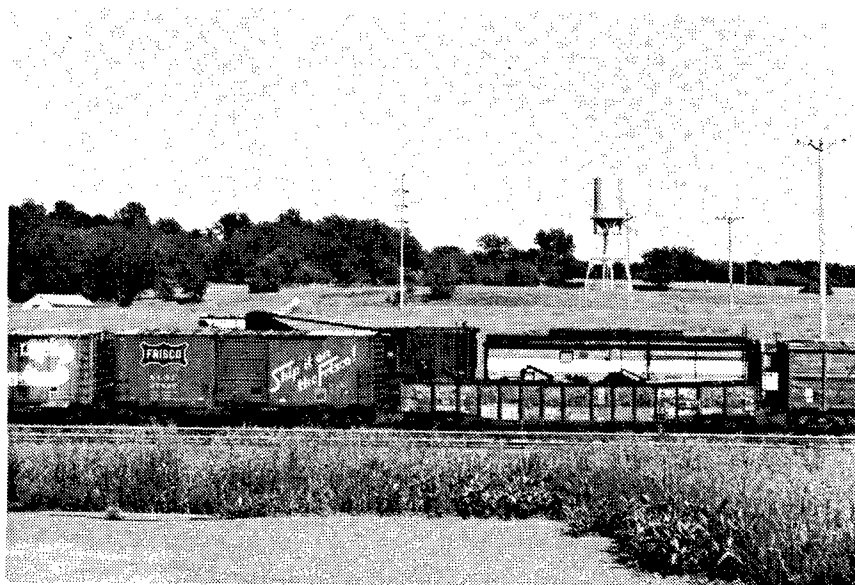


Figure 208. View of water tower and trains.

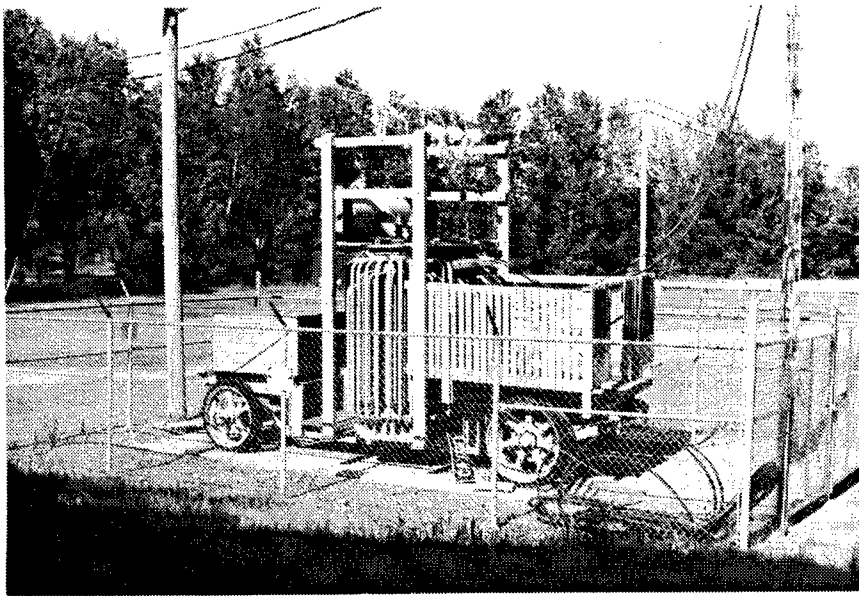


Figure 209. View of a Transformer Truck.

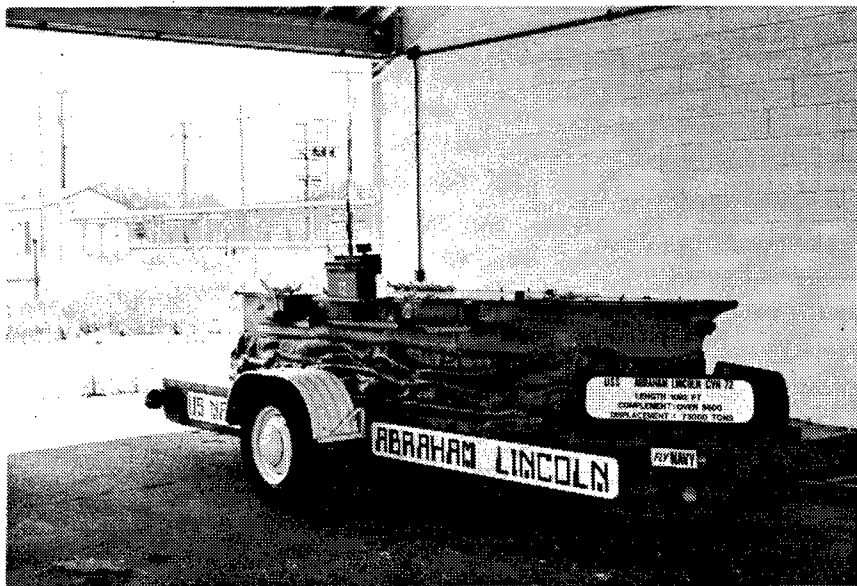


Figure 210. Model of the USS Abraham Lincoln.

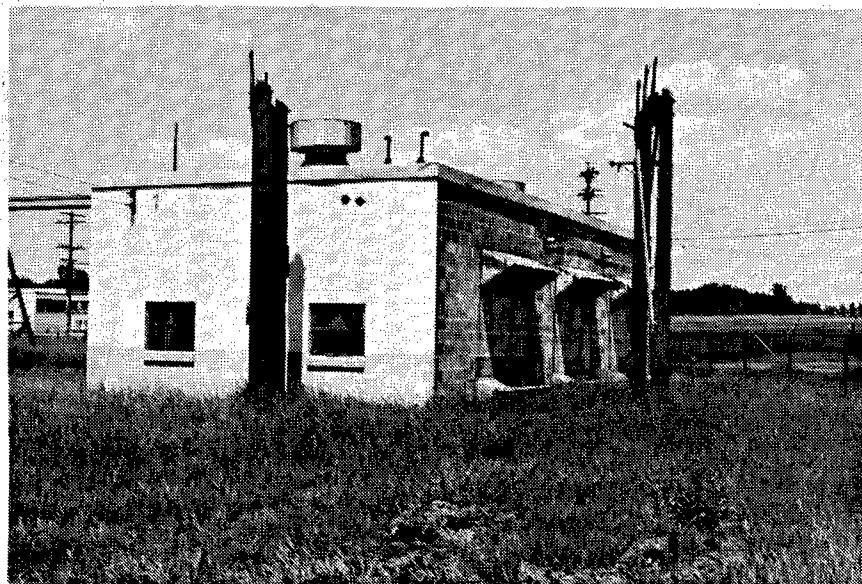


Figure 211. Building 507: Evaporation and Cooler House.

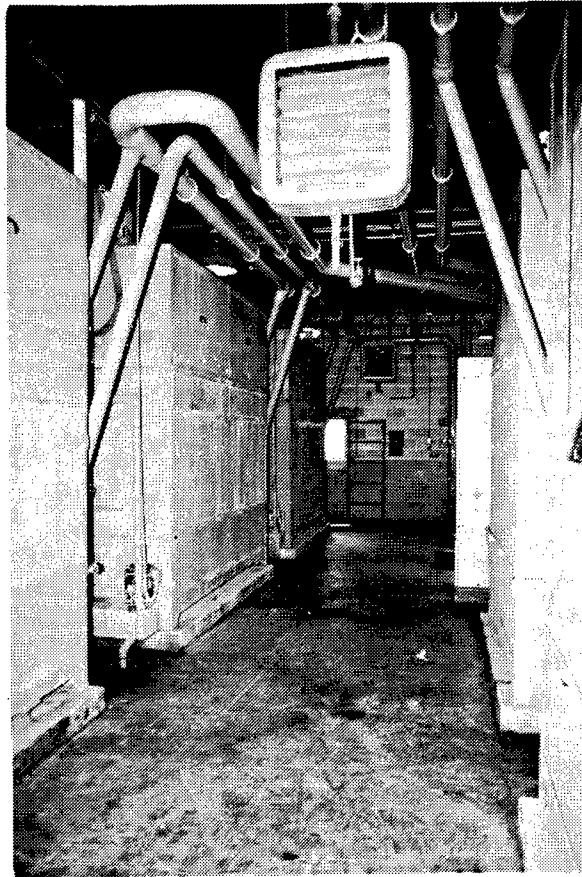


Figure 212. Building 507: Interior view of the Evaporation and Cooler House.

REFERENCES CITED

Corps of Engineers

- 1943 *Completion Report: Twin Cities Ordnance Plant, New Brighton, Minn.* Unpublished report. Record Group 77, National Archives (Office of the Chief Engineers), Completion Reports 1917-1943, Box 92.

Fairchild, B., and J. Grossman

- 1959 *The Army and Industrial Manpower.* The United States Army in World War II. Office of the Chief of Military History, Department of the Army, Washington, D.C.

MacDonald and Mack Partnership

- 1984 *Historic Properties Report: Twin Cities Army Ammunition Plant, New Brighton, Minnesota.* Submitted to the Historic American Buildings Survey/Historic American Engineering Record, National Park Service.

Murphey, J.S., K. Kachel, and R. Krippner

- 1993 *Inventory and Assessment of Small Arms Production Equipment of the Twin Cities Army Ammunition Plant, New Brighton, Minnesota.* Unpublished report. U.S. Army Corps of Engineers, Fort Worht District.

Ordnance Department

- 1942a *Twin Cities Ordnance Plant Historical Report General Introduction. 14 July - 31 December 1942.* Record Group 156, National Archives, Suitland, Maryland. [Public Relations Section newsletters and news releases.]
- 1942b *Twin Cities Ordnance Plant Historical Report General Introduction. 14 July - 31 December 1942.* Pt. 1. Record Group 156, National Archives, Suitland, Maryland.

War Department

- 1948 *Small-Arms Ammunition.* War Department Technical Manual TM9-1990, issued September 1947. Government Printing Office, Washington, D.C.

APPENDIX A
PHOTOGRAPHIC DATA SHEETS

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 1

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
1	118	Main Sewage Pumping Station	/	/	Snellgrove
2	111	Lead Extrusion and Swaging Building	/	/	Snellgrove
3	594 & 503	Overview of the Small Caliber Loading Plant (#503), the Machine Maintenance Shop (#594), and a Water Tower	/	/	Snellgrove
4	570	Blower House, environmental treatment site	/	/	Snellgrove
5	151	Metallurgical Chemical Laboratory	/	/	Snellgrove
6	115	Steam Generation Plant	/	/	Snellgrove
7	157	Fire Station	/	/	Snellgrove
8	102	Small Caliber Loading Plant where .30mm cartridges were manufactured	/	/	Snellgrove
9	105	Guard house located at Gate P4	/	/	Snellgrove
10	106-A	Old Guard House located at Gate P4	/	/	Snellgrove
11	558	Gas Meter House	/	/	Snellgrove
12	526A	no building description available	/	/	Snellgrove
13	525	Flammable Materials Storehouse	/	/	Snellgrove
14	588	Reclamation and Salvage Building	/	/	Snellgrove
15	515	Steam Generation Plant	/	/	Snellgrove
16	513	Salvage and Surplus Property Building	/	/	Snellgrove
17	503	Small Caliber Loading Plant	/	/	Snellgrove
18	594	Machine Maintenance Shop	/	/	Snellgrove
19	517-A	Building demolished on 9-30-93	/	/	Snellgrove
20	503	Southwest face of a Small Caliber Loading Plant where .50mm shells were manufactured	/	/	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 1

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
<hr/>					
21	158	Gas Meter House		/ /	Snellgrove
22	101	Small Caliber Loading Plant where .30mm shells were manufactured		/ /	Snellgrove
23	112	Machine Tool Shop		/ /	Snellgrove
24	108	Ballistic Testing Building where the quality of ammunition was tested		/ /	Snellgrove
25	717	Lumber Storage Building		/ /	Snellgrove
26		Railroad cars stored at Twin Cities		/ /	Snellgrove
27	908 & 909	Storage and Salvage Areas		/ /	Snellgrove
28	190	South face of a General Storage Warehouse		/ /	Snellgrove
29	174 & 176	Storage Warehouse (#174 - right) and Roads and Ground Equipment Storehouse (#176 - on left)		/ /	Snellgrove
30	114	South face of the Vehicle Maintenance Garage		/ /	Snellgrove
31	114	North face of a Vehicle Maintenance Garage		/ /	Snellgrove
32	167	Storage Building		/ /	Snellgrove
33	152	Storage Building, currently used for the storage of tires		/ /	Snellgrove
34	180	"Sewer Life Station"		/ /	Snellgrove
35	124A	no building description available		/ /	Snellgrove
36	153	General Storehouse that currently stores fire extinguishers		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 2

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
2	120	High Explosive Magazine		/ /	Snellgrove
3	189	no building descripton available		/ /	Snellgrove
4	308	Interior view of test area inside the Indoor Firing Range		/ /	Snellgrove
5	308	Interior of the Firing Room inside the Indoor Firing Range		/ /	Snellgrove
6	149-0	A storage area inside a Magazine		/ /	Snellgrove
7	149-0	Overview of a foyer to a storage area inside a Magazine		/ /	Snellgrove
8	149-0	Magazine		/ /	Snellgrove
9	135	Primer Manufacturing Building		/ /	Snellgrove
10	125	Small Arms Pyro Magazine		/ /	Snellgrove
11	Group 119	Overview of Powder Magazines		/ /	Snellgrove
12	126 & 127	Small Arms Pyro Magazines, with Bldg. #126 on left and Bldg. #127 on right		/ /	Snellgrove
13	519A	no building description available		/ /	Snellgrove
14	132B,129B,144A	Small Arms Pyro Magazine (#132B - left), Chemical Storage Magazine (#129B - center), and a Black Powder Storage Magazine (#144A - right)		/ /	Snellgrove
15	129A & 132A	Chemical Storage Magazine (129A - left), and a Small Arms Pyro Magazine (#132A - right)		/ /	Snellgrove
16	338B	Lead Styphnate Precipitation Building		/ /	Snellgrove
17	329	no building description available		/ /	Snellgrove
18	338A,B,C,D	Overview of four Lead Styphnate Precipitation Buildings (Bldgs. #338A, 338B, 338C and 338D)		/ /	Snellgrove
19	135	East face of the Primer Manufacturing Building		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 2

Exp. No.	Building No(s).	Description	Dir. Date	Recorder
20	327	Tetracene Precipitation Building	/ /	Snellgrove
21	315	Steam House	/ /	Snellgrove
22	304	Change House with Offices	/ /	Snellgrove
23		Model of the USS Abraham Lincoln	/ /	Snellgrove
24	195	Flammable Materials Storage House	/ /	Snellgrove
25	195	Flammable Materials Storage House	/ /	Snellgrove
26	138-C	Tracer and Igniter Building	/ /	Snellgrove
27	199	Tracer Manufacturing Offices	/ /	Snellgrove
28	192-B	P.R. Cake Drying House	/ /	Snellgrove
29	128	Chemical Storage Magazine	/ /	Snellgrove
30	192-B	Oven in the P.R. Cake Drying House	/ /	Snellgrove
31	138-A	Igniter Manufacturing, Interior main room	/ /	Snellgrove
32		Void	/ /	Snellgrove
33	138-A	Igniter Manufacturing Building: Hummer that used Barium Nitrate and Strontium Peroxide	/ /	Snellgrove
34	138-A	Igniter Manufacturing Building: Mikro Pulverizer	/ /	Snellgrove
35	138-A	Igniter Manufacturing Building: Cone Blender and Granular Machine	/ /	Snellgrove
36	308	Indoor Firing Range for ballistic testing, completed in 1968	/ /	Snellgrove
37	308	Indoor Firing Range for ballistic testing, completed in 1968	/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 3

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
2	108	Southwest face of the Ballistics Testing Building		/ /	Snellgrove
3	151	Metallurgical Chemical Laboratory		/ /	Snellgrove
4	190	General Storage Warehouse, south and west faces	NE	/ /	Snellgrove
5	125	Rail Loading door facade of a Small Arms Pyro Magazine		/ /	Snellgrove
6	127 & 126	Rail Loading door facades on two Small Arms Pyro Magazines (Bldg #127 on the left, and Bldg #126 on the right)		/ /	Snellgrove
7	119Q	Propellant Storage Magazine		/ /	Snellgrove
8	Group 119	Overview of Powder Magazines		/ /	Snellgrove
9	121B	Propellant Powder Sampling Building		/ /	Snellgrove
10		Overview of rail access to the Powder Magazines on upper Magazine Road		/ /	Snellgrove
11	139D	Igniter Composition Storage Building		/ /	Snellgrove
12	144H	Igniter Pre-mix Storage Magazine		/ /	Snellgrove
13	Group 139&144	Overview of Magazines in Group 139 and Group 144		/ /	Snellgrove
14		Overview of Staff Housing Area		/ /	Snellgrove
15	5186	Staff House		/ /	Snellgrove
16	5186	Garage for Staff House		/ /	Snellgrove
17	5200	Garage for Staff House		/ /	Snellgrove
18	5200	Staff House		/ /	Snellgrove
19	5200	Staff House and Garage		/ /	Snellgrove
20	5232	Staff House		/ /	Snellgrove
21	5240	Staff House		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 3

Exp. No.	Building No(s).	Description	Dir. Date	Recorder
22	5256	Staff House	/ /	Snellgrove
23	5268	Staff House	/ /	Snellgrove
24	5282	Staff House	/ /	Snellgrove
25	5292	Staff House	/ /	Snellgrove
26	5268	Staff House and Garage	/ /	Snellgrove
27	5302	Staff House	/ /	Snellgrove
28	5302	Garage for Staff House	/ /	Snellgrove
29	5324	Staff House	/ /	Snellgrove
30	5320	Staff House	/ /	Snellgrove
31	5330	Staff House	/ /	Snellgrove
32	5342	Staff House	/ /	Snellgrove
33	5342	Garage for Staff House	/ /	Snellgrove
34	116	Water Treatment Plant	/ /	Snellgrove
35	503	Small Caliber Loading Plant for manufacturing 5.56mm cartridges	/ /	Snellgrove
36	594	Machine Maintenance Shop	/ /	Snellgrove
37		Overview of Water Tower and trains	/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 4

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
3	116	Water Treatment Plant: In-place water treatment equipment		/ /	Snellgrove
4	116	Water Treatment Plant: Automatic stager		/ /	Snellgrove
5	116	Water Treatment Plant: Automatic stager		/ /	Snellgrove
6	116	Water Treatment Plant: Water softener by The Refinite Corporation of Omaha, Nebraska		/ /	Snellgrove
7	501	Northwest facade of a Small Caliber Loading Building where .30mm shells were manufactured		/ /	Snellgrove
8	501	Northeast facade of a Small Caliber Loading Building where .30mm shells were manufactured		/ /	Snellgrove
9	557	Maintenace Shop for Building #501		/ /	Snellgrove
10	587	Sheet Metal Shop		/ /	Snellgrove
11	589	Bullet Pull-down and Salvage Building		/ /	Snellgrove
12	590	C.P.R. Production Building		/ /	Snellgrove
13	511	Ammonium Nitrate Maintenance Shop		/ /	Snellgrove
14	571	Blower House/Environmental Treatment Site #6		/ /	Snellgrove
15	599	Steam Cleaning and Salvage Building		/ /	Snellgrove
16	598	no building description available		/ /	Snellgrove
17		Transformer Truck		/ /	Snellgrove
18	105	Administration Building		/ /	Snellgrove
19	502	Forge shop wing of the Small Caliber Loading Plant		/ /	Snellgrove
20	515, 503 & 590	Overview of the Steam Generation Plant (#515), a Small Caliber Loading Plant (#503) and a CBR Production Building (590)		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 4

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
21	503 & 501	Overview of a Small Caliber Loading Plant (#503) and a Small Caliber Loading Building (#501)		/ /	Snellgrove
22	501	Northeast facade of a Small Caliber Loading Building where .30 mm shells were manufactured		/ /	Snellgrove
23	503	Small Caliber Loading Plant for .50mm caliber cartridge manufacturing		/ /	Snellgrove
24	501	Small Caliber Loading Building		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 5

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
2	590 & 513	Overview of CBR Production Building (#590) and Salvage & Surplus Property Building (#513)		/ /	Snellgrove
3	501	Small Caliber Loading Building for .30mm shell manufacturing		/ /	Snellgrove
4	101 & 115	Overview of Power House (#105) and Small Caliber Loading Plant (#115)		/ /	Snellgrove
5	115 & 594	Overview of Heat Plant Building (#115) and Machine Maintenance Shop (#594)		/ /	Snellgrove
6	105, 101 & 115	Overview of Administration Building (#105), Small Caliber Loading Plant (#101) and the Power House (#115)		/ /	Snellgrove
7	190	Overview of a General Storage Warehouse (#190) and a Water Tower		/ /	Snellgrove
8	101	Small Caliber Loading Plant for .30mm shells		/ /	Snellgrove
9	135	Primer Manufacturing Plant in the metal parts production area: 7.62mm Primer by Emhart Manufacturing V&O Division (Received 1956)		/ /	Snellgrove
10	135	Primer Manufacturing Plant in the metal parts production area: .45 caliber primer by The V&O Press Company (Received in 1952)		/ /	Snellgrove
11	135	Primer Manufacturing Plant in the metal parts production area: 7.62mm Primer by the V&O Press Company (Received in 1942)		/ /	Snellgrove
12	135	Primer Manufacturing Plant in the metal parts production area: In-place Primer Machines		/ /	Snellgrove
13	135	Primer Manufacturing Plant in the metal parts production area: In-place Tumblers for .30mm, .45mm, .50mm caliber ammunition		/ /	Snellgrove
14	135	Primer Manufacturing Plant in the metal parts production area: Tumbling barrel by Baird Machine Company (Received in 1954)		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 5

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
15	135	Primer Manufacturing Plant in the metal parts production area: Dryer by Nobles Engineering and Manufacturing Company	/	/	Snellgrove
16	135	Primer Manufacturing Plant in the metal parts production area: Dryer by Nobles Engineering and Manufacturing Company	/	/	Snellgrove
17	135	Primer Manufacturing Plant in the metal parts production area: Drying Equipment for .30mm, .45mm, and .50mm caliber primers by Carrier Air Conditioning Corporation (Received in 1941)	/	/	Snellgrove
18	135	Primer Charge and Assembly Area in the Primer Manufacturing Plant in the metal parts production area	/	/	Snellgrove
19	135	Primer Charge and Assembly Workstation in the Primer Manufacturing Plant in the metal parts production area	/	/	Snellgrove
20	135	Primer Manufacturing Plant in the metal parts production area: .30 caliber Primer Assembly Lacquer Unit by Federal Cartridge Corporation (Received in 1952)	/	/	Snellgrove
21	135	Primer Manufacturing Plant in the metal parts production area: Vertical Press for .30 caliber ammunition by Hires, Castner and Harris Company (Received in 1953)	/	/	Snellgrove
22	135	Primer Manufacturing Plant in the metal parts production area: Cup - anvil shaker for .30 caliber ammunition by Emhart Manufacturing V&O Division (Received in 1954)	/	/	Snellgrove
23	135	Primer Manufacturing Plant in the metal parts production area: Primer Table Charging Hood by Dayton's Bluff Metal Works (Received in 1956)	/	/	Snellgrove
24	135	Primer Manufacturing Plant in the metal parts production area: Spot Check Table	/	/	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 5

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
25	111	Lead Extrusion and Swagging Building in the metal parts production area: Lead Extrusion Press by Watson Stillman Company	/	/	Snellgrove
26	111	Lead Extrusion and Swagging Building in the metal parts production area: Heading machine for .30, .45, and .50 caliber ammunition by National Machinery Company (manufactured in 1942)	/	/	Snellgrove
30	111	Lead Extrusion and Swagging Building in the metal parts production area: Hydraulic press for lead extrusion by Farrel Corporation (manufactured in 1969)	/	/	Snellgrove
31	111	Lead Extrusion and Swagging Building in the metal parts production area: Hydraulic press for lead extrusion by Farrel Corporation (manufactured in 1969)	/	/	Snellgrove
32	111	Lead Extrusion and Swagging Building in the metal parts production area: Hydraulic press for lead extrusion by Farrel Corporation (manufactured in 1969)	/	/	Snellgrove
33	111	Interior view of the Lead Extrusion and Swagging Building in the metal parts production area	/	/	Snellgrove
34	102	Small Caliber Loading Plant where .30mm ammunition was manufactured	/	/	Snellgrove
35	103	Small Caliber Loading Plant where .50mm ammunition was manufactured	/	/	Snellgrove
36	308	Overview of the Ballistics Testing/Firing Range Building in the Magazine Area	/	/	Snellgrove
37	115	Steam Generator Plant: Diesel generator by Fairbanks-Morse (received in 1941)	/	/	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 6

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
1	115	Steam Generator Plant: boiler by Erie City Iron Works	/	/	Snellgrove
2	105	Interior of the Lobby in the Administration Building	/	/	Snellgrove
3	503 & 501	Overview of a Small Caliber Loading Plant (#503) and a Small Caliber Loading Building (#501)	/	/	Snellgrove
4	101 & 105	Overview of a Small Caliber Loading Building (#101) and the Administration Building (#105)	/	/	Snellgrove
6	503	Interior view of the second floor in a Small Caliber Loading Plant	/	/	Snellgrove
7	503	Interior view of the first floor in the Small Caliber Loading Plant	/	/	Snellgrove
8	594	Interior of the Machine Maintenance Shop	/	/	Snellgrove
9	588	Interior of the Reclamation and Salvage Building	/	/	Snellgrove
10	557	Interior of the Maintenance Shop	/	/	Snellgrove
11	507	Interior of the Evaporator and Cooler House	/	/	Snellgrove
12	507	Evaporator and Cooler House	/	/	Snellgrove
13	975	Oxygen Storage House	/	/	Snellgrove
14	112	Interior of the Machine Tool Shop	/	/	Snellgrove
15	157	Interior of the Fire Station	/	/	Snellgrove
16	151	Interior of the Metallurgical Chemical Laboratory	/	/	Snellgrove
17	151	Interior of the Metallurgical Chemical Laboratory	/	/	Snellgrove
18	108	Interior of Ballistic Testing/Ammunition Quality Facility	/	/	Snellgrove
19	111	Lead Extrusion and Swaging Building: Wash, rinse, and dry machine by N Ranschoff Company (Received in 1941)	/	/	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 6

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
20	111	Lead Extrusion and Swaging Building: Wash, rinse, and dry machine by N Ranschoff Company (received in 1941)		/ /	Snellgrove
22	327	Interior of Tetracene Precipitation Building		/ /	Snellgrove
23	338-A	Interior of Lead Styphnate Precipitation Building		/ /	Snellgrove
24	132A	Interior of Small Arms Pyro Magazine		/ /	Snellgrove
26	144A	Interior of Black Powder Storage Magazine		/ /	Snellgrove
27	144F	Interior of Igniter Pre-mix Storage Magazine		/ /	Snellgrove
28	139C	Interior of Igniter Composition Storage Building		/ /	Snellgrove
29	189	Interior of unidentified building		/ /	Snellgrove
33	199	Interior of Tracer Manufacturing Offices		/ /	Snellgrove
34	121A	Interior of High Explosives Magazine/Propellant Powder Sampling Building		/ /	Snellgrove
36	119H	Interior of Small Arms Pyro Magazine and Propellant Storage Building		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 7

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
2	102	Small Caliber Loading Plant: Tracer charge machine by L.F. Fales Machine Company, 1953	/	/	Snellgrove
3	102	Small Caliber Loading Plant: Tracer charge stations	/	/	Snellgrove
4	102	Small Caliber Loading Plant: Tumbling barrel (bullet polisher in Tracer area) by Hupp Corporation, 1952	/	/	Snellgrove
5	102	Small Caliber Loading Plant: Bullet assembly machine by Waterbury Farrel, 1952	/	/	Snellgrove
6	102	Small Caliber Loading Plant: Tracer trim machine by Fidelity Machine Company Inc., 1952	/	/	Snellgrove
7	102	Small Caliber Loading Plant: Bullet trim machine by Fidelity Machine Company Inc., 1952	/	/	Snellgrove
9	102	Small Caliber Loading Plant: Bullet draw machine by E.W. Bliss Company, 1952	/	/	Snellgrove
10	102	Small Caliber Loading Plant: Bullet draw machine by E.W. Bliss Company 1941	/	/	Snellgrove
11	102	Small Caliber Loading Plant: Bullet draw machine by E.W. Bliss Company, 1941	/	/	Snellgrove
12	102	Small Caliber Loading Plant: First case draw by E.W. Bliss Company, 1941	/	/	Snellgrove
13	102	Small Caliber Loading Plant: Second case draw by E.W. Bliss Company, 1942	/	/	Snellgrove
14	102	Small Caliber Loading Plant: Case pocket (bumping) by Jarecki Machine and Tool Company, 1942	/	/	Snellgrove
17	102	Small Caliber Loading Plant: Third case draw by E.W. Bliss Company, 1942	/	/	Snellgrove
18	102	Small Caliber Loading Plant: Fourth draw by E.W. Bliss Company, 1952	/	/	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 7

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
19	102	Small Caliber Loading Plant: First case trim by Peters Engineering Company, 1939	/	/	Snellgrove
20	102	Small Caliber Loading Plant: Case head turn by Jarecki Machine and Tool Company, 1941	/	/	Snellgrove
21	102	Small Caliber Loading Plant: Case head turn by Jarecki Machine and Tool Company, 1941	/	/	Snellgrove
22	102	Small Caliber Loading Plant: Case head turn by Owens-Illinois Glass, 1942	/	/	Snellgrove
23	102	Small Caliber Loading Plant: TOCCO annealers by Park Ohio Industries, 1968	/	/	Snellgrove
24	102	Small Caliber Loading Plant: Visual inspection machine by Fidelity Machine Company, 1942	/	/	Snellgrove
25	102	Small Caliber Loading Plant: Tracer bullet polisher by N. Ranschoff, Inc., 1952	/	/	Snellgrove
26	102	Small Caliber Loading Plant: Taper and plug machine by E.W. Bliss Company, 1942	/	/	Snellgrove
27	102	Small Caliber Loading Plant: Mouth and neck anneal machine by St. Louis Ordinance Plant, 1954	/	/	Snellgrove
28	102	Small Caliber Loading Plant: Mouth and neck anneal machine by Peters Engineering Company, 1942	/	/	Snellgrove
29	102	Small Caliber Loading Plant: Gage and weigh machine by Star Tool and Die, 1942	/	/	Snellgrove
30	102	Small Caliber Loading Plant: Primer insert by V&O Press, 1951	/	/	Snellgrove
31	102	Small Caliber Loading Plant: Lindberg Furnaces by Lindberg Engineering Company, 1941	/	/	Snellgrove
32	102	Small Caliber Loading Plant: Pickler machine by G.S. Blakeslee & Company, 1941	/	/	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 7

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
33	102	Small Caliber Loading Plant: Case dryer by Colt Manufacturing Company, 1942		/ /	Snellgrove
34	102	Small Caliber Loading Plant: Lube Machine by Cincinnati Clean and Finish Company, 1952		/ /	Snellgrove
35	102	Small Caliber Loading Plant: Dispatch Oven by Dispatch Oven Company, 1954		/ /	Snellgrove
36	102	In-place equipment on the second floor of the Small Caliber Loading Plant		/ /	Snellgrove
37	102	Small Caliber Loading Plant: Rumbler washer by Baird Machine Company, 1941		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Twin Cities, Army Ammunition Plant

Roll Number: 8

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
2	102	Small Caliber Loading Plant: Dryer by Colt Manufacturing Company, 1952		/ /	Snellgrove
3	102	Small Caliber Loading Plant: Colt Autosan Dryer by Colt Manufacturing Company, 1952		/ /	Snellgrove
4	102	Small Caliber Loading Plant: Case and bullet soap tanks		/ /	Snellgrove
5	102	Small Caliber Loading Plant: Salem Furnace by Salem Engineering, 1951		/ /	Snellgrove
6	102	Small Caliber Loading Plant: Salem Furnace by Salem Engineering, 1951		/ /	Snellgrove
7	102	Small Caliber Loading Plant: Case polish rumbler by Smith Drum and Company, 1942		/ /	Snellgrove
8	102	Small Caliber Loading Plant: Salem Furnace by Salem Engineering		/ /	Snellgrove
9	102	Small Caliber Loading Plant: Tracer trim by Fidelity Machine Company, 1952		/ /	Snellgrove
10	102	View of the Loading Station in the Loading wing of the Small Caliber Loading Plant		/ /	Snellgrove
11	102	Small Caliber Loading Plant: Loading press by Dupont-DeNemours and Company		/ /	Snellgrove
12	717	Interior of a Lumber Storage Building		/ /	Snellgrove
13	717	Interior of a Lumber Storage Building		/ /	Snellgrove
15	174	Interior of a Storage House		/ /	Snellgrove
16	153	Interior of a General Storehouse used to store Fire Extinguishers		/ /	Snellgrove
17	127	Interior of a Small Arms Pyro Magazine		/ /	Snellgrove
18	127	Interior of a Small Arms Pyro Magazine		/ /	Snellgrove

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

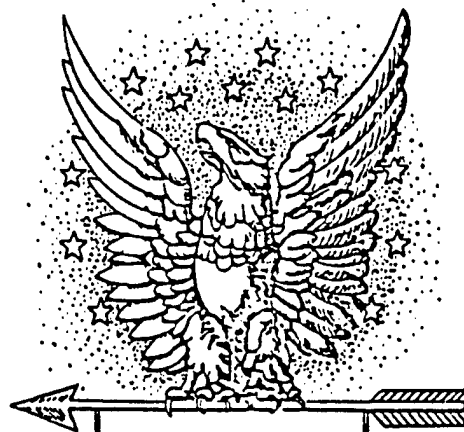
Installation: Twin Cities, Army Ammunition Plant

Roll Number: 8

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
19	127	Interior of a Small Arms Pyro Magazine		/ /	Snellgrove
20	127	Interior of a Small Arms Pyro Magazine		/ /	Snellgrove
21	126	Interior of a Small Arms Pyro Magazine		/ /	Snellgrove
22	545	Interior of the Proof House		/ /	Snellgrove
23	545	Interior of the Proof House		/ /	Snellgrove
24	545	Proof House		/ /	Snellgrove
25	114	Interior of Railroad and Vehicle Garage		/ /	Snellgrove

LEXINGTON

ROAD



PLOT PLAN

TWIN CITIES ORDNANCE PLANT

New Brighton, Minn.

One Inch Equals 480 Ft.



PATROL

GATE 9

NORTH

F

E

E

E

E

E

E

E

E

E

E

E

169

EC POWDER STORAGE
MAGAZINE

POWDER STORAGE MAGAZINES
S'S GROUP

Truck 21
MAGAZINE

LEXINGTON

B

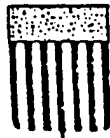


PLOT PLAN

TWIN CITIES ORDNANCE PLANT

New Brighton, Minn.

One Inch Equals 480 Ft.



ROAD

PATROL

HAMI

GATE 9

NORTH

E

E

100-21

MAGAZINE

569

□ E.C. POWDER STORAGE
MAGAZINE

POWDER STORAGE MAGAZINES
5th GROUP

C

AVENU

C



Safe Range Line Right 7

TARGET HOUSE N71
1000 YD. 147

HAMLINE

Line of Fire 7

1000 YD. BARRICADE

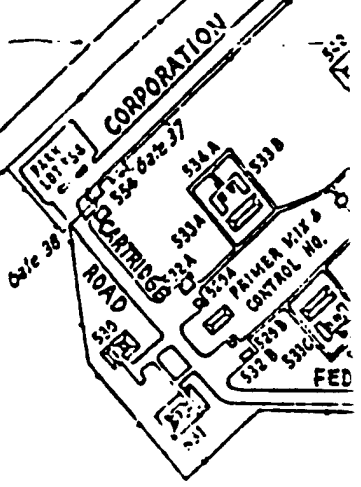
RANGE

1000 YD. OBSERVATION
HOUSE 156 C

UPPER

Line Left 7

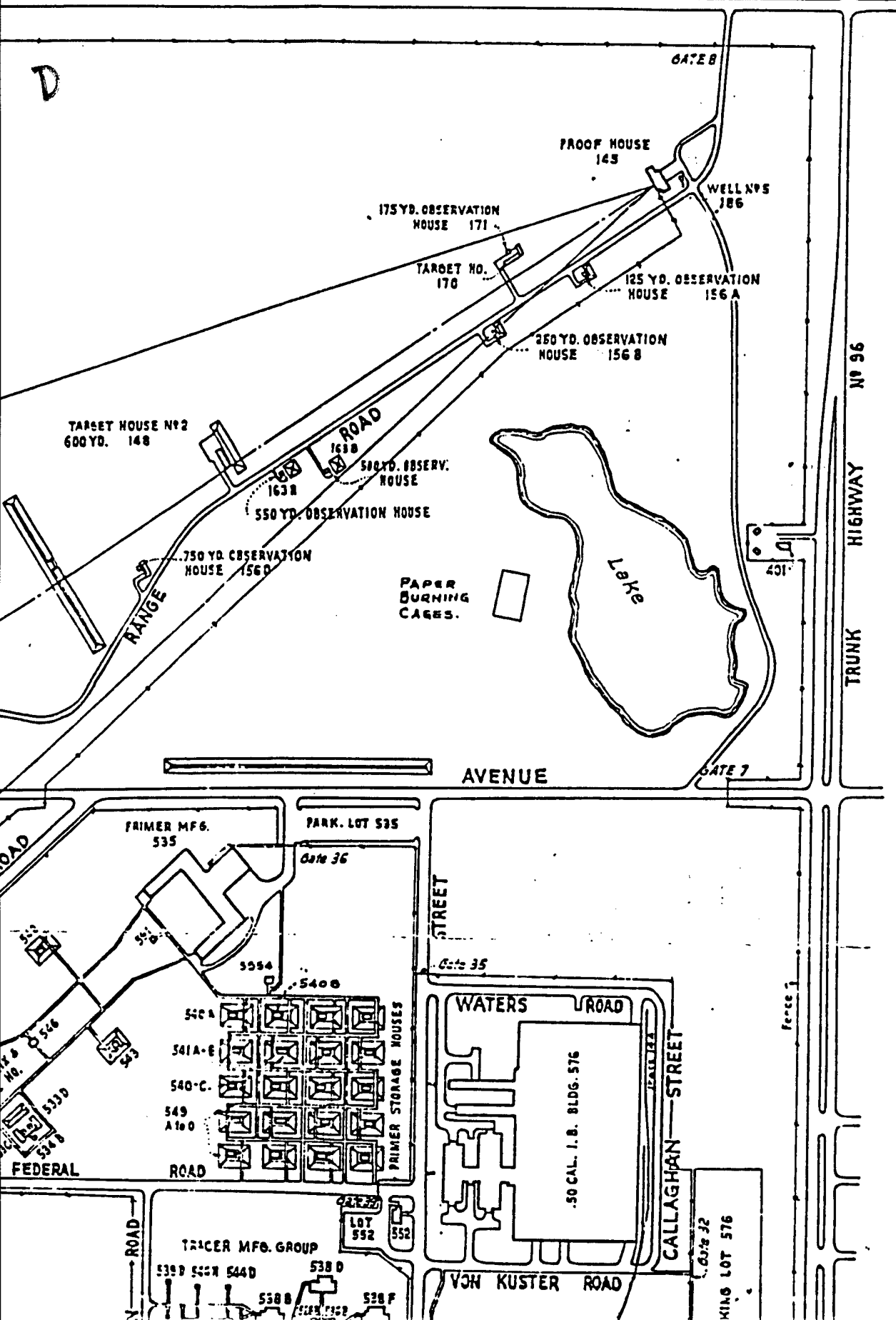
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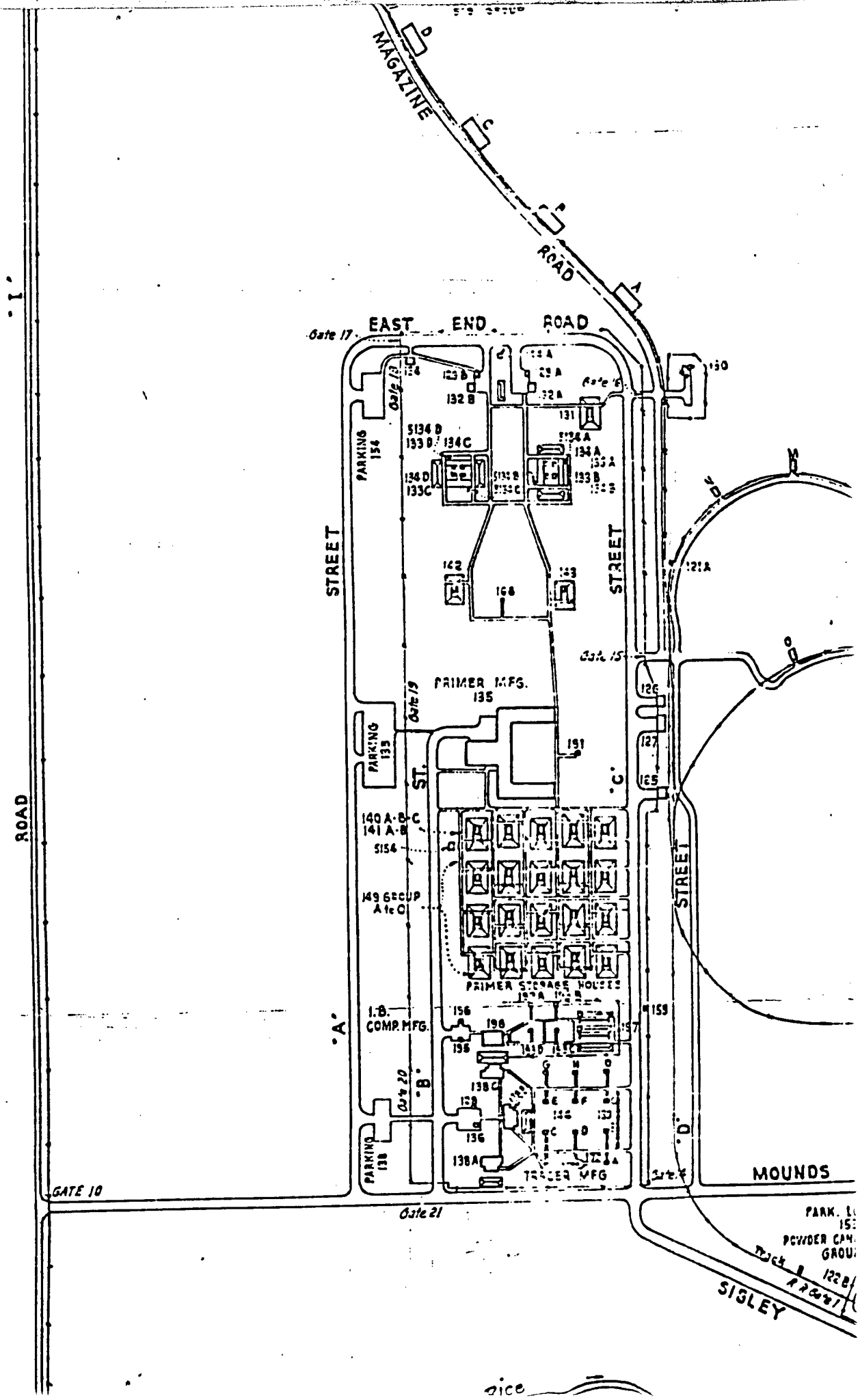
ENUE

To White Bear

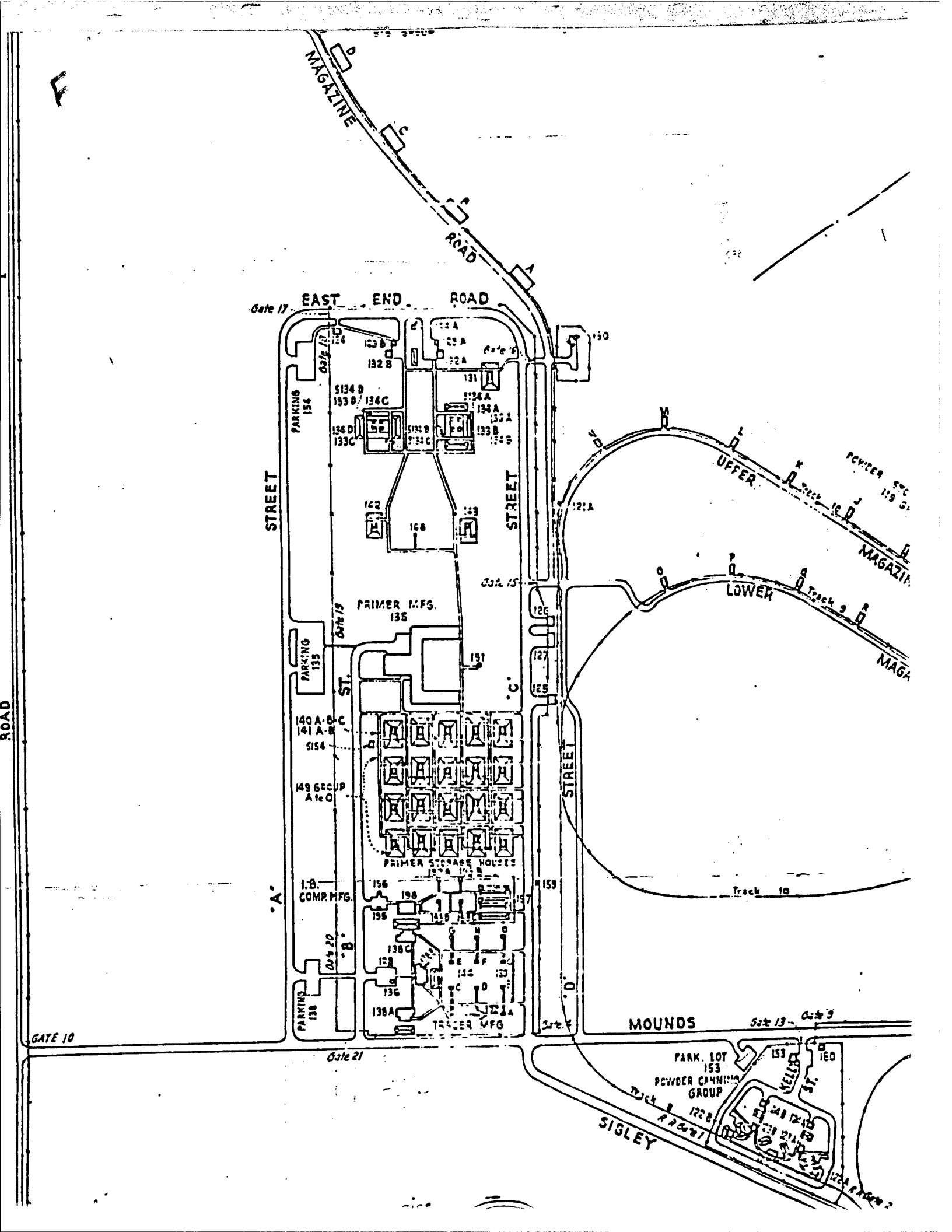
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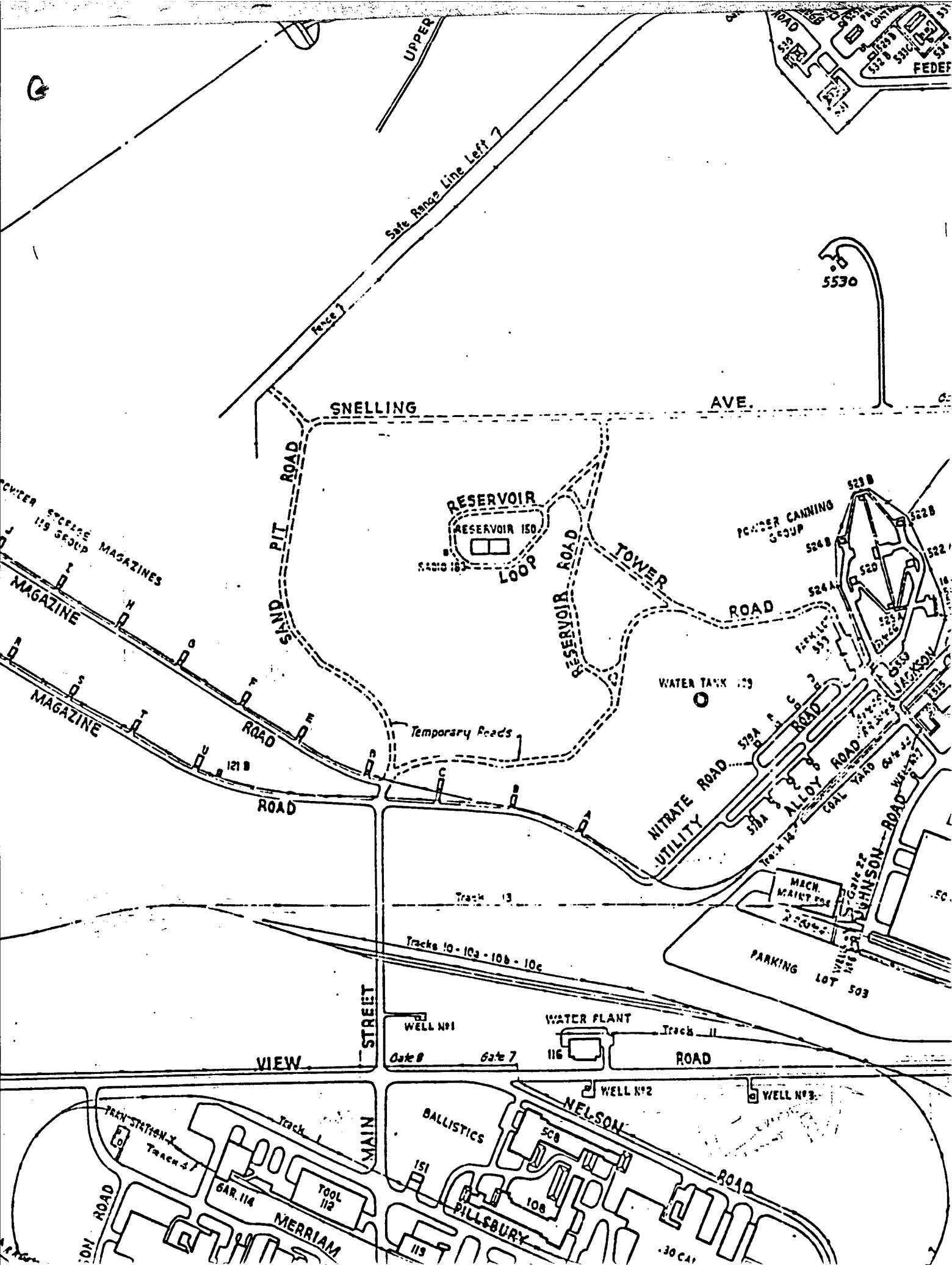


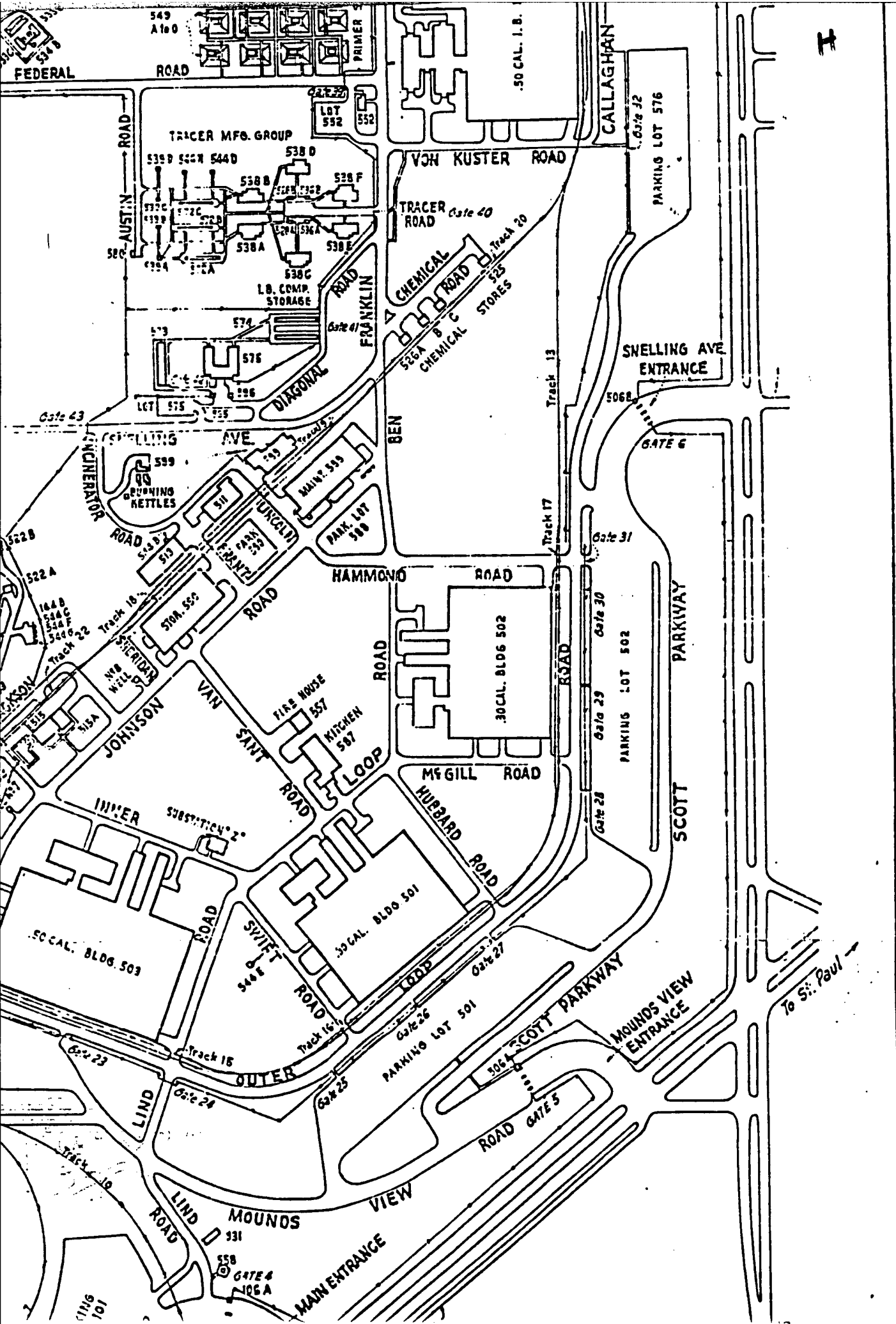
E



ROAD







I

ROAD

COUNTY

GATE 10

A

140 A-B-C
141 A-B
5154

149 62 CUP
A to C

1-B
COMP. MFG.

2 1/2 20
B

PARKING
138

PRIMER STORAGE HOUSES

157A 157B

156 196

195 141B 141C

138C 138

136 135

134 133

132 131

130 129

128 127

126 125

124 123

122 121

120 119

118 117

116 115

114 113

112 111

110 109

108 107

106 105

104 103

102 101

100 99

98 97

96 95

94 93

92 91

90 89

88 87

86 85

84 83

82 81

80 79

78 77

76 75

74 73

72 71

70 69

68 67

66 65

64 63

62 61

60 59

58 57

56 55

54 53

52 51

50 49

48 47

46 45

44 43

42 41

40 39

38 37

36 35

34 33

32 31

30 29

28 27

26 25

24 23

22 21

20 19

18 17

16 15

14 13

12 11

10 9

8 7

6 5

4 3

2 1

STREET

159

158

157

156

155

154

153

152

151

150

149

148

MOUNDS

PARK LOT

153

POWDER CANNING

GROUP

122B

122C

122D

122E

122F

122G

122H

122I

122J

122K

122L

122M

122N

122O

122P

122Q

122R

122S

122T

122U

122V

122W

122X

122Y

122Z

122AA

122AB

122AC

122AD

122AE

122AF

122AG

122AH

122AI

122AJ

122AK

122AL

122AM

122AN

122AO

122AP

122AQ

122AR

122AS

122AT

122AU

122AV

122AW

122AX

122AY

122AZ

122BA

122BB

122BC

122BD

122BE

122BF

122BG

122BH

122BI

122BJ

122BK

122BL

122BM

122BN

122BO

122BP

122BQ

122BR

122BS

122BT

122BU

122BV

122BW

122BX

122BY

122BZ

122CA

122CB

122CC

122CD

122CE

122CF

122CG

122CH

122CI

122CJ

122CK

122CL

122CM

122CN

122CO

122CP

122CQ

122CR

122CS

122CT

122CU

122CV

122CW

122CX

122CY

122CZ

122DA

122DB

122DC

122DD

122DE

122DF

122DG

122DH

122DI

122DJ

122DK

122DL

122DM

122DN

122DO

122DP

122DQ

122DR

122DS

122DT

122DU

122DV

122DW

122DX

122DY

122DZ

122EA

122EB

122EC

122ED

122EE

122EF

122EG

122EH

122EI

122EJ

122EK

122EL

122EM

122EN

122EO

122EP

122EQ

122ER

122ES

122ET

122EU

122EV

122EW

122EX

122EY

122EZ

122FA

122FB

122FC

122FD

122FE

122FF

122FG

122FH

122FI

122FJ

122FK

122FL

122FM

122FN

122FO

122FP

122FQ

122FR

122FS

122FT

122FU

122FV

122FW

122FX

122FY

122FZ

122GA

122GB

122GC

122GD

122GE

122GF

122GG

122GH

122GI

122GJ

122GK

122GL

122GM

122GN

122GO

122GP

122GQ

122GR

122GS

122GT

122GU

122GV

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122HD

122HE

122HF

122HG

122HH

122HI

122HJ

122HK

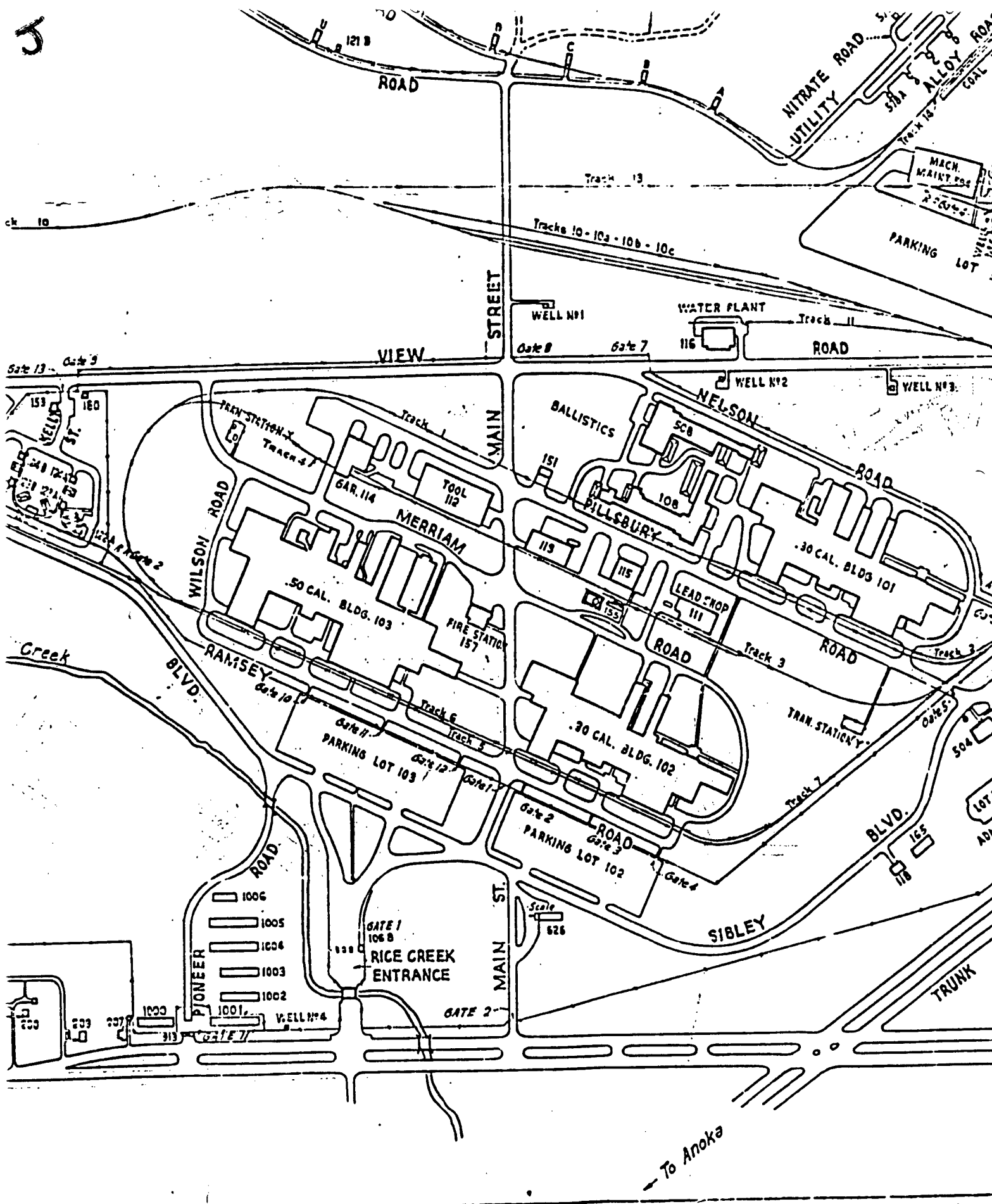
122HL

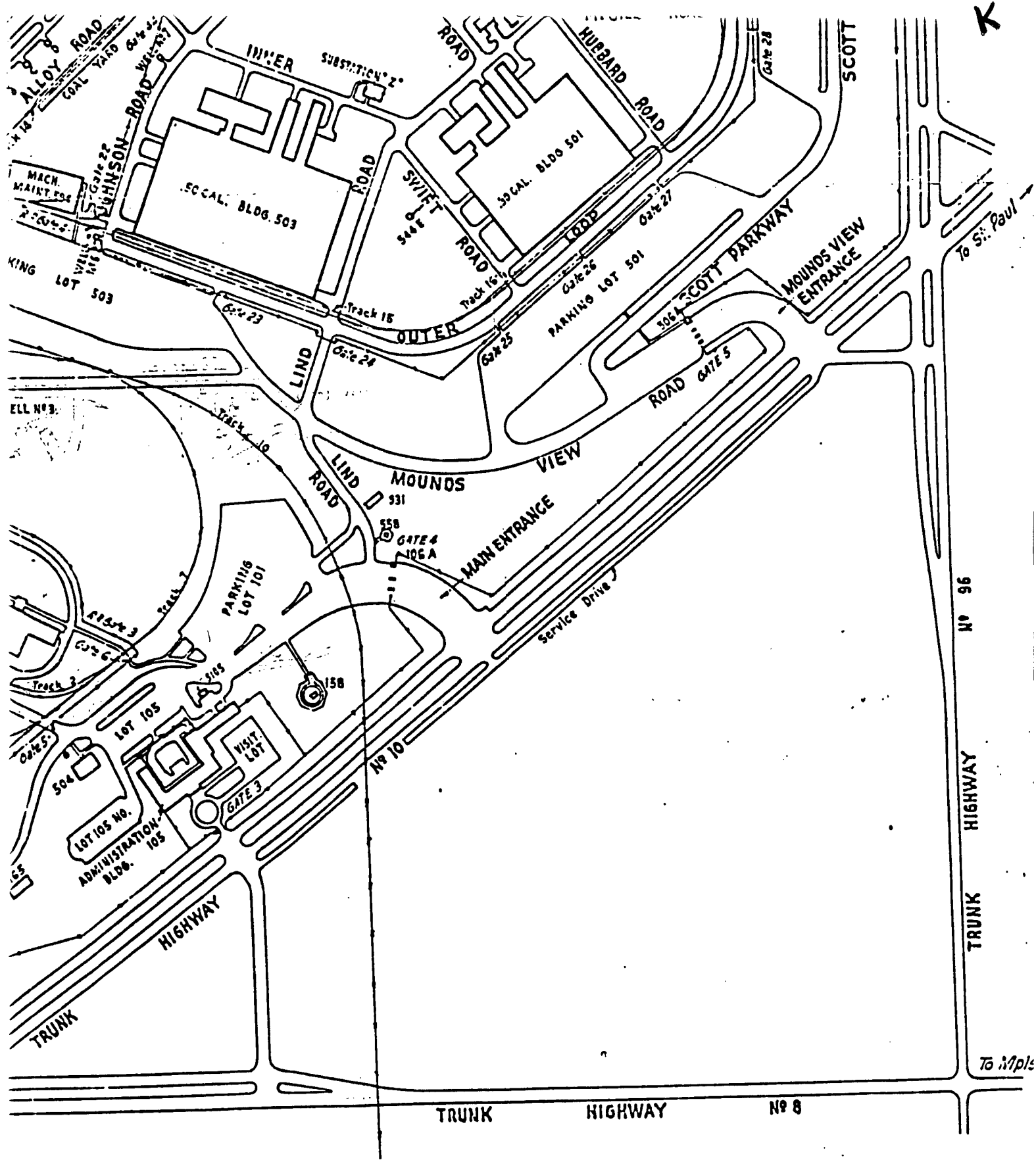
122HM

122HN

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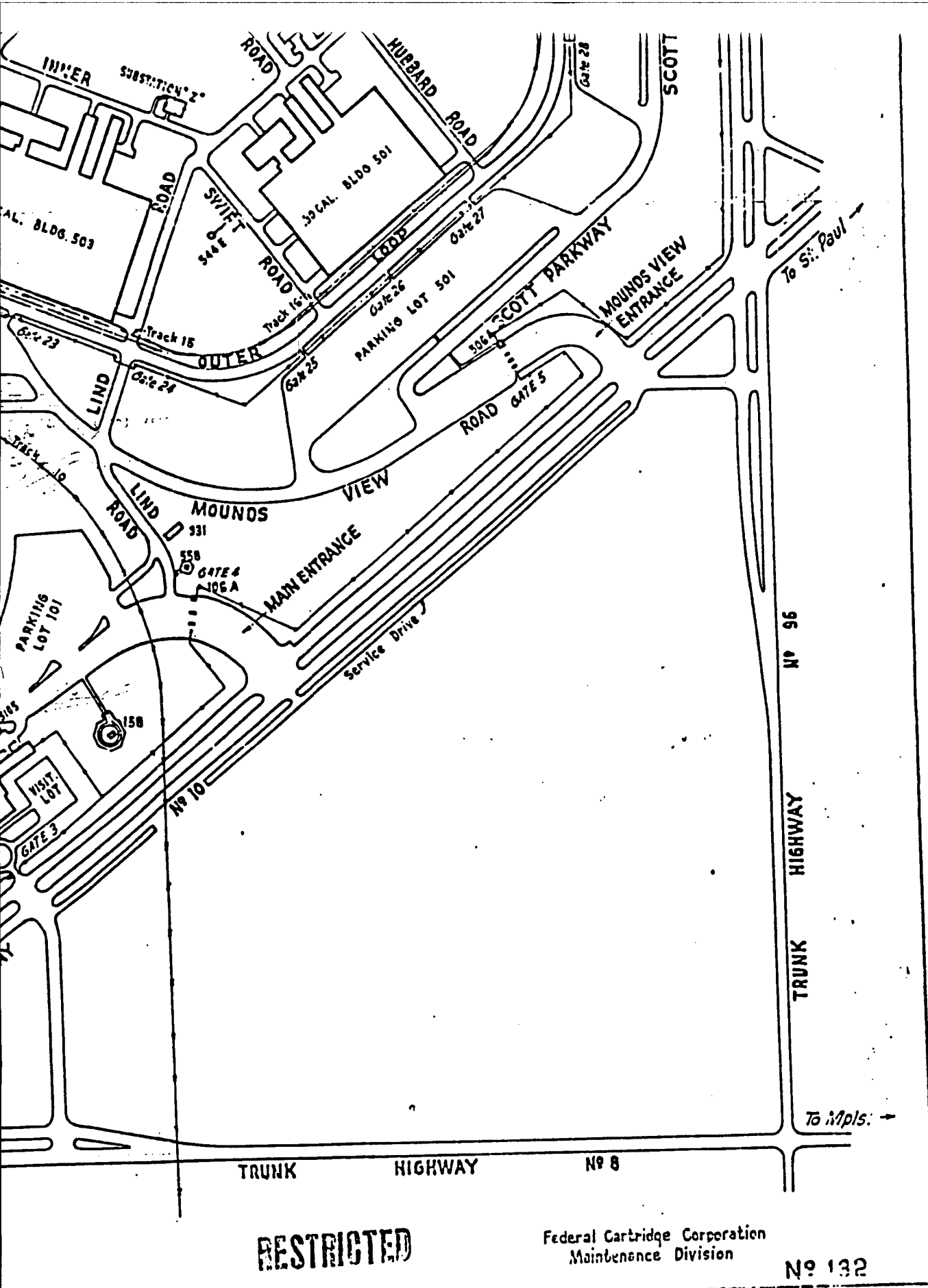




RESTRICTED

Federal Cartridge Corporation
Maintenance Division

Nº 132



RESTRICTED

Federal Cartridge Corporation
Maintenance Division

No 132